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COMMISSIONERS OF PATENTS
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A
RATIONAL ACCOUNT
OF THE
WEATHER,

Shewing the Signs of its ſeveral *Changes* and *Alterations*, together with the Philoſophical Reaſons of them.

COLLECTED

Not only from Common Obſervations, but chiefly from ſome of the moſt approv'd Authors, the moſt celebrated Philoſophers, and the moſt judicious Naturaliſts of this and former Ages, as Dr. *Halley*, Dr. *Mead*, Dr. *Woodward*, Dr. *Liſter*, Dr. *Grew*, Dr. *Robinſon*, Mr. *Dryden*, Mr. *Derham*, Mr. *Morton*, Mr. *Handley*, Dr. *Connor*, Lord *Bacon*, Mr. *Boyle*, Mr. *Ray*, Dr. *Wallis*, Dr. *Plot*, Monſ. *Ozanam*, Monſ. *Paſcal*, Seigneur *Malpigius*, *Gaſſendus*, *Bartholin*, *Hippocrates*, *Ariſtotle*, *Pliny*, *Aratus*, *Virgil*, *Horace*, *Lucan*, *Seneca*, and *Varro*.

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PREFACE.

AIR (*or the different Temperature of it, by which we mean* WEATHER) *is one of the grand Concerns of Mankind. 'Tis what affects all ſorts of People, Young as well as Old, Sick as well as Strong. Inſomuch that even thoſe very Perſons that for want of Health, are lock'd up in cloſe Rooms, feel either the Good or Ill Effects of the* Weather. *The* Air *being like Food, the better the more refreſhing. Hence it is that the Sick Man is inquiſitive what* Weather *it will be, and the Healthful, when he is to take a Journey, is willing to conſult his* Weather-Glaſs. *And even thoſe of the* Fair Sex, *are unwilling to ſtir abroad unleſs the* Weather *be like Themſelves, and they like the* Weather. *How glad wou'd each Man be, in his particular State and Condition of Life, either to be enſur'd of Good* Weather, *or foretold of Bad? How glad wou'd the* Country-Man *be, to be aſſur'd of Good* Weather *to ſow or reap his Corn and Hay? How glad wou'd the* Traveller *be, if he cou'd depend upon the* Weather *for ſuch a determinate time?*

To this end how frequently have Philoſophers *endeavour'd to make Schemes and Calculations of the* Weather? *And how even to this Day do your* Aſtrologers *and* Philomaths *pretend (tho' in vain) to their* High Flights *of Knowledge in their Prognoſtication of the* Weather, *from I know not what various Motions and Aſpects,* Trines, Squares, Sextiles, Conjunctions *and* Oppoſitions *of the* Planets *with the* Conſtellations, *and with one another, and ſuch like* Aſtrological *Cant and Jargon, which they are Annually troubling the World with, and with which glittering* Starry

Notions they are perpetually dazzling and deceiving the Eyes of the Unthinking Vulgar, who have neither Opportunities nor Abilities of examining or enquiring into the Reaſons of things. But how prettily ſoever theſe Men may talk of their Planets *and* Stars (*for I know no difference between 'em*) *and however* Solac'd *and* Jovial, Martial *and* Mercurial *they may be at ſometimes, yet doubtleſs they muſt take their Turns to be either* Saturnine, Venereal, *or* Lunatick *at other times, if* (*as they ſay*) Aſtra regunt Homines, *and if* (*as we ſay*) Semel inſanivimus omnes, *eſpecially when they are* Talking out of their Sphere. *However theſe* Scioliſts *may value themſelves upon their* Planetary or Starry *Knowledge, yet what Influence can ſuch Diſtant* Orbs *ſhed upon Ours; So as to afford us any Rational or even Probable Conjectures in relation to the* Weather? *If they cou'd, we had long before this time had certain and infallible Schemes of the* Weather *deliver'd down to us, from the Experience of ſome of the beſt* Aſtronomers, *that have for many Years together, and with the utmoſt Exactneſs, kept their* Diaries, *and made their ſtricteſt Obſervations upon the Conjunctions and Oppoſitions of the* Planets. *Yet after all, how often has it been obſerv'd, That the very ſame* Aſpect *of the very ſame* Planet, *has predicted ſuch a ſort of* Weather *at one time, and the quite Contrary at another?*

Indeed it muſt be granted, that the Sun *and* Moon *have Influence upon us, by reaſon of their Proximity, but as to the other* Orbs (*tho' all within the Verge of our* Planetary Syſtem) *they are notwithſtanding in this reſpect Strangers to us, and the* Stars *far greater. And when we gueſs at the enſuing* Weather *from the* Stars, *'tis only becauſe, by getting a clearer or obſcurer Sight of the* Stars, *we thereby diſcover the Clearneſs or Denſity of our Atmoſphere, and ſo accordingly* Prognoſticate *the Change and Alteration, or Continuance of Weather.*

Therefore I think we need go no ſarther than this our Sublunary World, *for the moſt probable and rational Conjectures in relation to the* Weather, *and deduce our Prognoſtications from the* Animals *and* Vegetables *of this our* Terrene Globe, *which is compoſed of Land, Water, and Air or Atmoſphere: The Surface of which* Earth *is large enough, being* 199444201 *Miles, and the Solid Content of Air (according to the moſt Modern Calculation)* 2341464949 *Cubick Miles. The Diſtance of the* Moon *from the* Earth 234304 *Engliſh Miles; and the Diſtance of the* Sun *from the* Earth 6485200 *Miles; and the Diſtance of the other* Planets, *in this our* Solar Syſtem, *proportionably far greater.*

And beſides all this, there are ſeveral Ingenious Inſtruments invented, and improv'd, as Barometers, Hygrometers, *and* Thermometers, *&c. by which Men of Ordinary Capacities may pretty eaſily Prognoſticate the* Temperature *of the* Air, *and conſequently the ſeveral Changes and Alterations of* Weather. *For Natural Cauſes do Naturally* (i. e. *according to the ſettled Order and Nature of things) produce Natural Effects, as a Dry* Air (i. e. Air *free from Vapours) will Naturally produce Fair* Weather, *and Humid* Air, *the contrary, unleſs hinder'd by Winds or the like. The ſame may be ſaid of all other ſorts of* Weather, *in reſpect of the ſeveral Degrees of Heat or Cold, Rarefaction or Condenſation.*

But not to inſiſt too much upon Generals, it may not perhaps be thought improper to deſcend to Particulars, and give you a ſhort but Phyſical Account of the different Phænomena *of the* Weather, *together with the Original of* Clouds, Rain, Hail, Snow, Winds, *&c. Which may help to give light to the* Prognoſtications *of the* Weather, *which I ſhall give you in the enſuing Diſcourſe. In which Natural Account of the ſeveral Sorts of* Weather, *I ſhall not altogether adhere to my own*

Opinion but give you the Opinions of the moſt celebrated Virtuoſo's, and more eſpecially of the Reverend and Ingenious Mr. Derham, *F.R.S. in his* Phyſico-Theology.

And firſt, concerning Clouds *and* Rain. Clouds *and* Rain *(ſays Mr.* Derham*) are made of Vapours raiſed from Water or Moiſture only. (So that he utterly excludes the notion of Dry, Terrene Exhalations or Fumes; Fumes being really no other than the Humid Parts of Bodies reſpectively Dry.) Theſe Vapours are demonſtratively no other than ſmall Bubbles, or* Veſiculæ *detach'd from the Waters by the Power of the Solar, or Subterraneous Heat, or Both. And being lighter than the Atmoſphere, are buoyed up thereby, till they become of an equal Weight therewith, in ſome of its Regions aloft in the Air, or nearer the Earth; in which thoſe Vapours are form'd into* Clouds, Rain, Snow, Hail, Lightning, Dew, Miſts, *and other* Meteors.

In this Formation of Meteors, *the grand Agent is* Cold, *which commonly, if not always, occupies the ſuperior Regions of the Air; as is manifeſt from thoſe Mountains which exalt their lofty Tops into the Upper and Middle Regions, and are always cover'd with* Snow *and* Ice.

This Cold, *if it approaches near the Earth, preſently precipitates the Vapours, either in* Dews; *or if the Vapours more copiouſly aſcend, and ſoon meet the* Cold, *they are then condens'd into* Miſling, *or elſe into Showers of* Small-Rain, *falling in numerous, thick, ſmall Drops: But if thoſe Vapours are not only Copious, but alſo as Heavy as our Lower Air it ſelf (by means of their* Bladders *being thick and fuller of Water,) in this Caſe they become viſible, ſwim but a little Height above the Earth, and make what we call a* Miſt *or* Fog. *But if they are a Degree lighter, ſo as to mount Higher, but not any great Height, as alſo meet not with* Cold *enough to condenſe them, nor* Wind *to diſſipate them, they then form an heavy, thick,* dark

Sky, *laſting for ſeveral Weeks without either* Sun *or* Rain. *And in this Caſe, I have ſcarce ever known it to* rain, *till it has been* firſt Fair, *and* then Foul, *be the* Wind *where it will. And from what has been ſaid, the Caſe is eaſily accounted for,* viz. *Whilſt the* Vapours *remain in the ſame State, the* Weather *does ſo too. And ſuch* Weather *is generally attended with moderate* Warmth, *and with little or no* Wind *to diſturb the* Vapours, *and an heavy Atmoſphere to ſupport them, the* Barometer *being commonly high then. But when the* Cold *approaches, and by condenſing, drives the* Vapours *into* Clouds *or Drops, then is way made for the* Sun-beams, *till the ſame* Vapours, *being by further Condenſation, form'd into* Rain, *fall in Drops.*

The Cold's *approaching the* Vapours, *and conſequently the Alteration of ſuch* dark Weather *I have* (*ſays Mr.* Derham) *before-hand perceiv'd by ſome few ſmall Drops of* Rain, Hail, *or* Snow, *now and then falling, before any Alteration has been in the* Weather; *Which I take to be from the* Cold *meeting ſome of the ſtraggling* Vapours, *or the uppermoſt of them, and condenſing them into Drops, before it arrives unto, and exerts it ſelf upon the main Body of* Vapours *below.*

I have (*ſays he*) *more largely inſiſted upon this Part of the* Weather, *becauſe it gives light to many other Phænomena of the* Weather. *Particularly we may hence diſcover the Original of* Clouds, Rain, Hail, *and* Snow; *that they are Vapours carried aloft by the Gravity of the Air, which meeting together ſo as to make a* Fog *above, they thereby form a* Cloud: *If the* Cold *condenſes them into Drops, they then fall in* Rain, *if the* Cold *be not intenſe enough to freeze them: But if the* Cold *freezes them in the* Clouds, *or in their Fall thro' the Air, they then become* Hail, *or* Snow.

As to Lightning, *and other enkindled* Vapours, *I only obſerve, that they owe alſo their Riſe to* Vapours;

but ſuch Vapours *as are detatch'd from Mineral Juices, or at leaſt that are mingled with them, and are fir'd by Fermentation.*

Another Phænomenon *reſolvable from what has been ſaid is, Why a* Cold, *is always a* Wet *Summer,* viz. *becauſe the* Vapours *riſing plentifully then, are by the* Cold *ſoon collected into* Rain.

We may obſerve farther, that about the Æquinoxes *we have oftentimes more* Rain, *than at other Seaſons. The Reaſon of which is manifeſt, becauſe in Spring, when the Earth and Waters are looſ'd from the Brumal Conſtipations, the* Vapours *ariſe in great Plenty: And the like they do in Autumn, when the Summer Heats, that both diſſipated them, and warm'd the Superior Regions, are abated; and then the* Cold *of the Superior Regions meeting them, condenſes them into* Showers *of* Rain, *more plentiful than at other Seaſons, when either the* Vapours *are fewer, or the* Cold *that is to condenſe them is leſs.*

The Manner how Vapours *are precipitated by the* Cold, *or reduc'd into Drops, I conceive to be thus;* Vapours *being no other than inflated* Veſiculæ *of Water, when they meet with a Colder Air than what is contain'd in them, the contain'd Air is reduc'd into a leſſer Space, and the watery Shell or Caſe, render'd thicker by that means, ſo as to become heavier than the Air, by which they are buoy'd up, and conſequently muſt needs fall down. Alſo many of thoſe thicken'd* Veſiculæ *run into One, and ſo form Drops, greater or ſmaller, according to the Quantity of* Vapours *collected together. Concerning which, the learned and ingenious Dr.* Halley *has given us ſome curious Experiments, in our* Philoſ. Tranſ. *which may be met with together in Mr.* Lowthorp's Abridg. *Vol.* II. *p.* 108. *and* 126. *Mr.* Sedileau *alſo at* Paris *obſerv'd it for near Three Years: By whoſe Obſervations it appears, that what is rais'd in* Vapours, *exceeds that which falls in* Rain.

And by all their Obſervations it appears, that in the Winter Months the Evaporations *are leaſt, and greateſt in Summer, and moſt of all in* Windy Weather. *Vid. Mem. de Math. Phyſ. Ann.* 1692. *p.* 25.

If it be demanded what becomes of the Over-plus of Exhalations *that deſcend not in* Rain? *I anſwer, they are partly tumbled down and ſpent by the* Winds, *and partly deſcend in* Dews, *which amount to a greater Quantity than is commonly imagin'd. Dr.* Halley *found the Deſcent of* Vapours *in* Dews, *ſo prodigious at St.* Helena, *that he makes no doubt to attribute the Origin of* Fountains *thereto. And I my ſelf (ſays Mr.* Derham) *have ſeen, in a ſtill, cool Evening, large thick* Clouds *hanging without any Motion in the Air, which in* 2 *or* 3 *Hours time have been melted down by Degrees, by the Cold of the Evening, ſo that not any of the leaſt Remains of 'em have been left.*

Concerning Winds; Ventus eſt Aer fluens, *according to* Seneca, *and* Aer agitatus, *according to* Ariſtotle. *And as Wind is a Current of the Air, ſo (ſays Mr.* Derham) *that which excites or alters its Currents, may be juſtly ſaid to be the Cauſe of the* Winds. *An Æquipoiſe of the Atmoſphere produces a Calm; But if that Æquipoiſe be more or leſs taken off, a* Stream *of* Air, *or* Wind, *is thereby accordingly produc'd either ſtronger or weaker, ſwifter or ſlower. And divers things there are that may make ſuch Alterations in the Æquipoiſe or Balance of the Atmoſphere,* viz. *Eruptions of Vapours from Sea or Land; Rarefactions and Condenſations in one Place more than another; the falling of* Rain, *Preſſure of the* Clouds, *&c.*

Pliny (*L.* 2. *c.* 45.) *tells us of a certain* Cavern *in* Dalmatia *call'd* Senta, In quem (*ſays he*) dejecto levi pondere, quamvis tranquillo die, turbini ſimilis emicat Procella. *But as to* Caves *it is obſerv'd, that they often emit* Winds *more or leſs. Dr.* Conner *taking notice of this Matter, ſpecifies theſe,* In Regno *Neopolitano* ex immani *Sybillæ* antro tenuem *Ventum* effluentem percepi. *The like he obſerv'd at the* Caves *at* Baiæ, *and in ſome of the Mines in* Germany, *and in the large* Salt-Mines *of* Cracow *in* Poland. Ubi (*ſays he*) opifices, & ipſe fodinæ Dominus *Andreas Morſtin*, Nobilis *Polonus*, mihi aſſeruerunt, quod tanta aliquando *Ventorum* Tempeſtas ex ambagioſis hujus Fodinæ receſſibus ſurgere ſolebat, quod laborantes Foſſores humi proſternebat, nec non Portas & Domicilia (quæ ſibi in hâc Fodinâ Artifices extruunt) penitus evertebat. Bern. Connor. Diſſert. Med. Phyſ. p. 33. Artic. 3.

And as great Caves, *ſo great* Lakes *ſometimes ſend forth* Winds. *So* Gaſſendus *ſays the* Lacus Legnius *does*, è quo dum exoritur Fumus, Nubes haud dubiè creanda eſt, quæ ſit brevi in Tempeſtatem ſæviſſimam exoneranda. Gaſſend. Vit. Peireſk. L. 5. p. 417.

But the moſt univerſal and conſtant Alterations of the Balance of the Atmoſphere, are from Heat and Cold. This is manifeſt in the general Trade-Winds, *blowing all the Year between the* Tropicks *from Eaſt to Weſt: If the Cauſe thereof be (as ſome Ingenious Men imagine) the Sun's daily Progreſs round that Part of the Globe, and by his Heat rarifying one Part of the Air, whilſt the cooler and heavier Air behind preſſes after. So the Sea and Land Breezes; and ſo in our Climate, the Northerly and Southerly Winds (commonly eſteem'd the Cauſes of Cold and Warm* Weather) *are really the Effects of the Cold or Warmth of the the Atmoſphere. Of which (ſays Mr.* Derham) *I have had ſo many Confirmations, that I have no doubt of it. As for Inſtance, it is not uncommon to ſee a warm* Southerly Wind, *ſuddenly chang'd to the* North, *by the fall of* Snow *or* Hail; *To ſee the* Wind *in a* Froſty *Cold Morning* North, *and when the* Sun *has well warm'd the Earth and Air, you may obſerve it to wheel about towards the* Southerly *Quarters;*

and again to turn Northerly *or* Eaſterly *in the Cold Evening. It is from hence alſo, that in* Thunder-*Showers the* Wind *and* Clouds *are oftentimes contrary to one another* (*eſpecially if* Hail *falls*), *the Sultry Weather below directing the* Wind *one way, and the Cold above, the* Clouds *another way. I took notice* (*ſays Mr.* Derham) *upon* March 10*th* 1710-11. (*and divers others ſuch like Inſtances I have had before and ſince*) *That the Morning was Warm, and what* Wind *ſtir'd, was* Weſt South-Weſt, *but the Clouds were Thick and Black* (*as generally they are when* Snow *enſues*) *A little before Noon the* Wind *vered about to* North *by* Weſt, *and ſometimes to other Points, the* Clouds *at the ſame time flying ſome* North *by* Weſt, *ſome* South-Weſt: *About One o' Clock it* rain'd *apace, the* Clouds *flying ſometimes* North-Eaſt, *then* North, *and at laſt both* Wind *and* Clouds *ſettled* North *by* Weſt: *At which time* Sleet *fell plentifully, and it grew very Cold. From all which I obſerve, Firſt, That tho' our Region below was Warm, the Region of the* Clouds *was Cold, as the black Snowy* Clouds *ſhow'd. Secondly, That the Struggle between the Warmth of Ours, and the Cold of the* Cloudy *Region, ſtop'd the Airy Currents of both Regions. Thirdly, That the falling of the* Snow *thro' our Warmer Air melted into* Rain *at firſt; but it became* Sleet *after the ſuperior Cold had conquer'd the inferior Warmth. Fourthly, That, as that Cold prevail'd by degrees, ſo by degrees it wheel'd about, both the* Winds *and* Clouds *from the* Northwards *towards the* South.

Hippocrates, L. 2. de *Vict. Orat.* Omnes *Ventos* vel à Nive, Glacie, vehementi Gelu, Fluminibus, &c. ſpirare neceſſe judicat. *Bartholin.* de *Uſu Nivis.* c. 1.

THE

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PROGNOSTICATIONS
Of the
WEATHER, &c.

Prognoſtications of Rainy Weather from Animals.

Creatures that live in the Open Air, muſt needs be ſuppos'd to have quicker Senſe of it, than Men that live more within Doors, and eſpecially *Birds* that live in the Air freeſt and cleareſt, and are apter by their Voices, and Flight, and other Motions, to diſcover their Senſations of it. Therefore thoſe who have apply'd themſelves to the Obſervation of the Signs and *Prognoſtications* of good or bad *Weather*, have laid down theſe following Rules:

Water-Fowls (ſays my Lord *Bacon*, in his *Nat. Hiſt.* Cent. 9*th*) ſuch as *Sea-Gulls*, *Moor-Hens*, &c. when they flock and fly together from the Sea towards the Shores, foretell Rain and Wind.

Thus *Virgil*, in his *Georgicks*, Lib. 1. enumerating the Signs of Rain,

Cum medio celeres revolant ex Æquore Mergi,
Clamoremque ferunt ad Littora; cumque Marinæ
In ſicco ludunt Fulicæ; *notaſque paludes*
Deſeruit, atque altam ſupra volat Ardea *nubem.*

Which Mr. *Dryden* expreſſes thus,

When crying *Cormorants* forſake the Sea,
And ſtretching to the Covert wing their Way;
When ſportful *Coots* run skimming o'er the Strand, *&c.*

And contrariwiſe, *Land-Birds*, as *Crows*, and *Swallows*, &c. when they fly from the Land to the Waters, and beat the Waters with their Wings, do likewiſe foretell Rain and Wind. Thus *Pliny* in his *Nat. Hiſt.* Lib. 18. Cap. 79.

Si Corvi *carptim vocem reſorbebunt, ventoſum Imbrem præſagiunt*---*Et cum* terreſtres Volucres *contra Aquam clangores dabunt, perfundentes ſeſe, ſed maximè* Cornix.

And thus *Lucan*, Lib. 5. Verſ. 555.

Quodque caput ſpargens undis, velut occupat Imbrē,
Inſtabili greſſu metitur littora Cornix.

The natural Reaſon of all which, is the Pleaſure that both Sorts of *Birds* take in the Moiſtneſs and Denſity of the Air, and ſo love to be in Motion and upon the Wing. For it is no wonder that *Water-Fowl* do delight moſt in that Air which is moſt like (their natural Element) Water; and *Land-Fowl* alſo (many of 'em) take Pleaſure in Bathing and Moiſt Air. For the ſame Reaſon likewiſe many *Birds* do prune their Feathers, and *Geeſe* do gaggle, and *Crows* ſeem to call upon Rain. All which is but the Pleaſure they ſeem to take in the Relaxation of the Air. *Anſeres* (ſays *Pliny*) *continuo clamore intempeſtivi. Vid. etiam* Theophr. *Lib. de* Signis Temp. *p.* 124.

The *Heron*, being a Water-Fowl, takes pleaſure in the Air that is condens'd; and beſides, being but Heavy of Wing, needs the help of the groſſer Air, and for this reaſon flies low when the Air is groſs and thickens into Showers. Thus *Lucan*, Lib. 5. Verſ. 553.

——————*Quodque auſa volare*
Ardea *ſublimis pennæ confiſa natanti.*
When watchful *Herons* leave their watry Stand,
And mounting Upward, with erected Flight,
Gain on the Skies, and ſoar above the Sight.

The *Crows* flocking together in large Flights, holding their Heads upward as they fly, and crying louder than uſual, is a Sign of Rain, as is alſo their ſtalking by Rivers and Ponds, and ſprinkling themſelves. Thus *Virgil*,

----*Et è paſtu decedens agmine magno*
Corvorum *increpuit denſis Exercitus alis.*
Jam varias Pelagi Volucres, *& quæ* Aſia *circum*
Dulcibus in Stagnis rimantur prata Cayſtri,
Certatim largos humeris infundere rores;
Nunc caput objectare Fretis, nunc currere in Undas,
Et ſtudio inceſſum videas geſtire lavandi,
Tum Cornix *plena pluviam vocat improba voce,*
Et ſola in ſiccâ ſecum ſpatiatur arenâ.
Huge Flocks of riſing *Rooks* forſake their Food,
And, crying, ſeek the Shelter of the Wood.
Beſides the ſev'ral Sorts of *Wat'ry-Fowls*,
That ſwim the Seas, or haunt the ſtanding Pools;
The *Swans* that ſail along to ſearch their Food,
Then lave their Backs with ſprinkling Dews in vain,
And ſtem the Stream to meet the promis'd Rain.
The *Crow* with clam'rous Cries the Show'r demands,
And ſingle ſtalks along the Deſart Sands.

Thus likewiſe *Aratus,*

Agmine cum denſo circumvolitare videtur
Gracculus, *& tenui cum ſtridunt gutture* Corvi,
Convenit inſtantes prænoſcere protinùs imbres.

The Chattering of *Swallows*, and their flying low about Lakes and Ponds (which they do to catch Flies, for the Air being clog'd with Vapours hinders the Aſcent of Flies) denotes Rain. Thus *Virgil,*

Aut arguta Lacus circumvolitavit Hirundo.
The *Swallow* skims the River's watry Face.

Hence *Pliny* who had theſe hints from *Virgil,*

Hirundo *tam juxta Aquam volitans, ut penna ſæpè percutiat. See* Theop. *Lib de* Sig. Temp. *p.* 111.

Other Signs of Rainy Weather are, when *Peacocks* cry much: When *Fowls* pick up their Feathers with their Bills: When *Birds* that uſually perch upon Trees, fly to their Neſts; *quæque in Arboribus habitant, fugitantes in Nidis ſuis* ---ſays *Pliny:* When *Cocks* crow before their uſual Hour, and *Hens* creep in cluſters into the Duſt: and *Owls* are clamorous; *Noctua in imbre garrula,* ſays *Pliny.*

And as *Birds* ſo *Beaſts* likewiſe foretell Rain. When *Sheep* leap mightily, and puſh at one another with their Heads. *Pecora exultantia, & indecora laſcivia ludentia*--- ſays *Pliny.*

When *Deers* fight, when *Aſſes* bray, or ſhake their Ears, or are much annoy'd with Flies. When *Foxes* and *Wolves* howl mightily: So *Virgil,*

——————————————*Et alte*
Per noctem reſonare, Lupis *ululantibus, Urbes.*

When *Oxen* tied together raiſe their Heads, and lick their Snouts, When *Hogs* at play break and ſcatter their Food: *Turpes* Porci *alienos ſibi manipulos lacerantes*--- ſays *Pliny.*

When *Cattle* leave-off feeding, and haſten to ſhelter under Hedges and Buſhes, *&c.*

When *Cats* rub their Heads with their Fore-Paws (eſpecially that Part of their Heads above their Ears) and lick their Bodies with their Tongues.

Beaſts do generally take delight in a moiſt Air, and it makes 'em eat their Meat the better; and therefore *Sheep* will raiſe themſelves betimes in the Morning to feed againſt Rain; and *Cattle*, and *Deer*, and *Rabbets* will feed hard before Rain, and *Heifers* will put up their Noſes and ſnuff in the Air againſt Rain. Thus *Virgil*,

——————*Aut* Bucula *Cœlum*
Suſpiciens patulis captavit naribus Auras.
The *Cow* looks up, and from afar can find
The Change of Heav'n, and ſnuffs it in the Wind.

Hence *Pliny*,

Et Boves *Cœlum olfactantes, ſeque lambentes contra Pilum.*

Fiſhes likewiſe in the Sea, or in Rivers, do often foretell Rain, by their playing towards the Top of the Water. The Reaſon of which is this (ſays my Lord *Bacon*) *Fiſh* love to keep from the Air as much as they can when it is Dry, and ſwim lower, and will not approach the Air till it is Moiſt.

Inſects alſo, and *Reptiles* foretell Rain. Vermes-terreni *erumpentes*--- ſays *Pliny*: *Earth-Worms* will creep out of the Ground, and *Moles* will caſt up more Earth, and *Fleas* bite more againſt Rain; and *Flies* are very troubleſome often daſhing againſt a Man's Face. *Bees* do not ſtir (or at leaſt not far) from their Hives. *Ants* quit their Labour and hide themſelves in the Ground: For theſe provident *Inſects*, by a ſecret Inſtinct of Nature, finding the Air chang'd into Moiſtneſs and clog'd with Vapours carry their Eggs to a Place of dryer Security.

Thus *Virgil*,

Sæpius & tectis penetralibus extulit Ova
Anguſtum Formica *terens iter----*
The Careful *Ant* her ſecret Cell forſakes,
And drags her Eggs along the narrow Tracts.

Hence *Pliny*,

Segniter & contra induſtriam ſuam abſconditæ Formicæ, *vel concurſantes, aut Ova progerentes.*

Frogs will croak in Ditches more than uſually againſt Rain, and *Toads* are heard to croak upon Eminences. Thus *Virgil*,

Et veterem in limo Ranæ *cecinere querelam.*
The *Frogs* renew the Croaks of their loquacious Race.

Hence *Pliny*,--Ranæ *ultra ſolitum vocales.*

Aratus,

Si repetent veterem Ranæ *per Stagna querelam.*

Even in *Men*, Aches, Wounds, and Corns, are more troubleſome, either towards Rain, or towards Froſt: For the one makes the Humours of the Body to abound more, and the other makes 'em ſharper: Both of which Extreams bring the Gout. Mr. *Ozanam* (in his *Mathemat. and Phyſic. Recreat.*) ſays, The very Body of all *Animals* and *Vegetables*, is (as it were) a Contexture of Hygrometers, Barometers, and Thermometers; for the Humours, with which the organiz'd Bodies are repleniſh'd, increaſe or decreaſe according to the different Diſpoſitions of the Air.

A late ingenious Author (Mr. *Handley*, in his *Mechanical Eſſays on the Animal Oeconomy*, p. 354. &c.) ſays, ---All the Changes that happen, either by Heat or Cold, to fermenting Liquors, are caus'd by the Alteration of either the Gravity or Spring of the Air: And it is for the ſame Reaſon that ſome People by their *Pains*, are ſo often Weather-wiſe. Their Blood being more rarify'd againſt wet Weather or high Winds, will more forcibly preſs the ſenſible Membranes, whereby *Pains* will be felt which they felt not before.

If the Air be too Hot, eſpecially if Moiſt withall, it diſpoſes to malignant Feavers; and if the Heat be exceſſive (altho' without Moiſture) it produces Diary Feavers, and ſometimes what the Ancients call'd *Putrid.* Perſpiration being too great, the Humours muſt remain Viſcid and Dry, and ſo unfit for Circulation.

The Air being fill'd with Vapours, its Elaſticity is weaken'd, the Fibres of the Body are relax'd, and the Pores obſtructed; which will make the Blood apt to depoſite a ſlimy Lentor on the Sides of the Capillary Arteries, and Orifices of the Glands, which will be apt to produce Agues, and more eſpecially, if Cold be added to the Moiſture of the Air, for Cold binds up and makes the Blood more compact, whereby its Motion becomes ſlower, and its Viſcidity greater, and ſo produces this Diſtemper.

Prognoſtications of Rainy Weather from Solid Bodies.

STones (eſpecially *Marble)* when they Sweat (or rather only ſeem to Sweat) and *Boxes* and *Doors* (eſpecially *Deal)* and *Pegs* of *Wood* when they draw and wind hard, are Signs of Wet Weather. Tho' the former be but from an Outward Cauſe, for that the *Stones* are ſo hard and ſolid as not to admit the Moiſture of the Air, and therefore it only lies upon the Superficies of the *Stones:* But the latter is an Inward Swelling of the Body of the *Wood* it ſelf, cauſed by the admiſſion of the Air thro' its Pores.

Monſ. *Ozanam* (in his *Mathematick and Phyſick Recreations* p. 447.) ſays, The moiſt Vapours do readily inſinuate into *Wood*, eſpecially that which is light and dry, as being extreamly Porous; inſomuch that they are ſometimes made uſe of for dilating and breaking the hardeſt Bodies, particularly Mill-ſtones; For when a Rock is cut into a Cylinder, they divide that into ſeveral leſſer Cylinders, by making ſeveral Holes round the great Cylinder, at diſtances proportional to the deſign'd Thickneſs of the Mill-ſtones; and filling them with as many Pieces of *Sallow Wood* dried in an Oven; For when wet Weather comes, theſe *Wedges* or Pieces of *Wood*, are ſo impregnated with the moiſt Corpuſculums of the Air, that they ſwell and break, or ſeparate the Cylindrical Rock into ſeveral Mill-ſtones.

The Hardeſt and moſt Solid *Wood* will ſwell by the Moiſture of the Air, as appears by the Difficulty of ſhutting our Doors and Windows in Wet Weather.

The Humidity of the Air inſinuates it ſelf not only into the *Wood,* but likewiſe into the *Hardeſt Bodies* which are not deſtitute of Pores, and eſpecially into the Light Bodies which take up a great Space: And hence it is, that M^r^. *Paſchal* (in his Treatiſe of the *Æquilibrium of Liquors*) ſays, That if a Pair of Scales continues in *Æquilibrio* when loaded with two equal Weights, one of which is of a more voluminous Subſtance than the other, as *Cotton* or any Body of a leſſer Specifick Gravity, the Balance will depart from its *Æquilibrium*, and incline to that more voluminous Weight when the Air is Condenſed with Vapours: For the Watry Particles, with which the Air is loaded, will inſinuate themſelves more readily into this, than into the other Weight, which being leſs Voluminous, muſt needs have leſſer Pores.

But of all the Bodies that are apt to imbibe the Moiſture of the Air, I know of none more ſuch than the *Salt* of any Hot Plant, or *Salt-petre* well Calcin'd, which, upon the leaſt Moiſture of the Air, melts readily into Water, ſo as to weigh 3 or or 4 times as much as before. For this is the Common Quality of almoſt all *Salts*, that they are eaſily impregnated with the Bodies contain'd in the Air; and accordingly when the *Salt* at a Table is Moiſter than ordinary, we take it for a certain Sign of approaching *Rain*, as denoting that the Air is loaded with Moiſt Vapours, which will quickly diſſolve into *Rain*.

Prognoſtications of Rainy Weather from the Planets *and* Stars.

IF the *Sun* at its Riſing looks Red, and Broader than uſual, then many Moiſt Vapours are gathering from the Sea, the Air is thickning, and the *Sun beams* diffus'd in it, makes the Face of that Planet ſhow greater than uſual, and in a little time you'll ſee the Clouds muſter, and ſpread the Face of the Heavens, and the Air condenſing into a Water Body: And if this happen in Hot Weather, *viz.* Summer or Autumn, violent Showers will fall, but not of long Continuance; but if in Winter or Spring, ſettled Rains, but more moderate.

Thus *Virgil, Georg.* Lib. 1.

Sol *quoque & Exoriens, & cum ſe condit in Undas*
Signa dabit: Solem *certiſſima Signa ſequuntur,*
Et quæ Mane refert, & quæ ſurgentibus Aſtris,

Ille ubi Naſcentem maculis variaverit Ortum
Concavus in Nubem, medioque refugerit Orbe;
Suſpecti tibi ſint Imbres. Namq; arguet ab Alto
Arboribuſque ſatiſque Notus Pecorique ſiniſter.
Above the reſt, the *Sun,* who never lies,
Foretells the Change of Weather in the Skies:
For if he riſe, unwilling to his Race,
Clouds on his Brow, and Spots upon his Face;
Or, if thro' Miſts he ſhoots his ſullen Beams,
Frugal of Light, in looſe and ſtragling Streams;
Suſpect a driſling Day, with Southern Rain,
Fatal to Fruits, and Flocks, and promis'd Grain.

Pliny, Nat. Hiſt. Lib. 18. C. 35.

Sol *concavus Oriens pluvias prædicit: idem Ventos, cum ante Exorientem eum Nubes rubeſcunt: quod ſi & nigræ rubentibus intervenerint, & Pluvias. Cum Orientis & Occidentis radii rubent, coire Pluvias.*

It has likewiſe been obſerv'd by thoſe that have had long Experience of the Weather, that if the *Sun* riſes with a Blewiſh Circle inclining to White, the Air is groſs and condenſed, and Rain will ſoon fall.

Or if the *Sun* riſes Pale, and the Sky of a Dusky-Red in the Morning, an Over-caſting will ſoon enſue, and Rain quickly follow upon it, attended with Whisking Winds.

Thus *Pliny, Nat. Hiſt.* Lib. 18. Cap. 35.

Si in Exortu Solis *fiet, ita ut rubeſcant Nubes, maxima oſtendetur Tempeſtas. Si non ambibunt, ſed incumbent, à quocunque Vento fuerint, eam portendent.*

If the *Sun* riſes in a Miſty-muddy Colour, or in a Black Cloud, and diffuſes its Rays Paliſh towards the *North* and *South,* it denotes Rain. So *Pliny: Si in Exortu* Solis *ſpargentur Nubes partim ad* Auſtrum, *partim ad* Aquilonem, *pura circa eum Serenitas ſit licet, Pluviam tamen Ventoſq; ſignificabunt.*

Ità *Feſtus Avienus*, p. 69. De *Sole*.

Sed non ora Cavo ſimilis, medioque recedens
Ore quaſi, vel ſi radios diſcingitur ultro
Figat ut Auſtralem *porrecti Sidere partem,*
Ac Boream *rigidi jaculetur liminis ignem,*
Et Vento & Pluviis reparatâ luce carebit.

And as for the *Sun* Setting, it has been obſerv'd, That if he Setts under a thick Cloud, there will be Rain next Day: or, if it rains immediately, there will be a great deal of Wind next Day; which is almoſt the conſtant Conſequence of a Pale-ſetting *Sun*.

Thus *Pliny*. *Si in Occaſu* Solis *pluet, aut radii in ſe Nubem trahent, aſperam in proximum Diem Tempeſtatem ſignificabunt*.

A Red Sky at *Sun-riſing* is a Sign of Rain; but a Red Sky where the *Sun* ſets, is a Sign of Fair Weather. Indeed if the Sky be Red at a great Diſtance from the Part where the *Sun* ſets, as in the Eaſt, there will be either Rain or Wind the next Day.

Virgil's Remarks on the ſetting *Sun* are theſe (*Geor*. L. 1.)

Hoc etiam, emenſo cum jam decedet Olympo,
Profuerit meminiſſe magis. Nam ſæpe videmus
Ipſius *in vultu varios errare Colores.*
Cæruleus *Pluviam denunciat*, Igneus *Euros.*
Sin maculæ incipient Rutilo *immiſcerier* Igni,
Omnia tum pariter Vento Nimbiſque videbis
Fervere——

But more than all, the ſetting *Sun* ſurvey,
When down the Steep of Heav'n he drives the Day.
For oft we find him finiſhing his Race
With various Colours erring on his Face;
If fiery *Red* his glowing Globe deſcends,
High Winds and furious Tempeſts he portends:
But if his Cheeks are ſwoln with livid *Blue*,
He bodes wet Weather by his Watry Hue:

If *Dusky* Spots are vary'd on his Brow,
And, ſtreak'd with *Red*, a troubl'd Colour ſhow;
That ſullen Mixture ſhall at once declare
Winds, Rain, and Storms, and Elemental War.

Pliny's farther Remarks on the *Sun's* Riſing and Setting, are theſe, Lib. 18. c. 35. *Nat. Hiſt.*

Si in Ortu Solis *aut in Occaſu contracti cernentur Radii, Imbrem ſignificabunt.*

Cum Oriente radii non illuſtres eminebunt, quamvis circundati Nube non ſint, Pluviam portendunt.

Si Nubes Solem *circumcludent, quantò minus luminis relinquent, tantò turbidior Tempeſtas erit. Si verò etiam duplex Orbis fuerit, eò atrocior.*

Si Oriens Sol *cingetur Orbe, ex quâ parte is ſe aperit, expectetur Ventus.*

Si in Exortu longè radios per Nubes porriget, & medius erit inanis, Pluviam ſignificabit.

Si ante Ortum Radii ſe oſtendent, Aquam & Ventum.

Si circa Occidentem candidus Circulus erit, Noctis levem oſtendent Tempeſtatem: Si Nebula, vehementiorem: Si candente Sole, *ventum: Si ater Circulus fuerit, ex quâ Regione is ruperit ſe, Ventum magnum.* So much for the *Sun.*

The *Moon* likewiſe has its Signs. Thus a Pale *Moon* is the forerunner of Rain: Red, of Wind: Clear, of fine Weather.

Pallida Luna *pluit, rubicunda flat, alba ſerenat.*

Si rubicunda exorta eſt Luna, *Ventos; ſi nigra, Pluvias portendere creditur*, ſays *Pliny*, L. 18. c. 79.

Virgil, Georg. Lib. 1.

Luna *revertentes cum primum colligit ignes,*
Si nigrum obſcuro comprenderit aëra Cornu.
Maximas Agricolis Pelagoque parabitur Imber.
At ſi Virgineum ſuffuderit ore ruborem,
Ventus erat. Vento ſemper rubet aurea Phœbe.

When firſt the *Moon* appears, if then ſhe ſhrouds
Her Silver Creſcent, tip'd with ſable Clouds,
Conclude ſhe bodes a Tempeſt on the Main,
And brews for Fields impetuous Floods of Rain.
If the *Moon's* Face with fiery Fluſhing glow,
Expect the ratling Winds aloft to blow.

When the *Moon* is compaſs'd about with a very large Circle, or is dim and miſty, then Wind or Rain follows, or Snow ſpeedily, or likely within 24 Hours.

If the *Moon's* Horns are blunt at its firſt Riſing, at, or within 2 or 3 Days after the Change, it denotes Rainy Weather for that Quarter; but ſeaſonable Weather the other Quarters. *In Quinta* (ſays *Pliny*) *Cornua* Lunæ *obtuſa, Pluviam: erecta & infeſta Ventos ſemper ſignificant: Quarta tamen maxime*—— *Si Quartam orbis rutilus cingit, Ventos & Imbres præmonebit.*

Naſcens Luna (ſays *Varro*) *ſi Cornu ſuperiore obatro* (*vel obatrato*) *ſurget, Pluvias decreſcens dabit: Si inferiore, ante Plenilunium: Si in media nigritia illa fuerit, Imbrem in Plenilunio.*

An Iris round the *Moon*, is likewiſe a Sign of Rain, with a South Wind.

Nor are the *Stars* (tho' at ſo great a Diſtance) deſtitute of their Signs. The *Stars* ſeeming bigger than uſually, pale, dull, and not twinkling, ſhow the Air is condenſing to Rain, which will ſoon fall.

The *Stars* appearing more Bright and Blazing than ordinary in Summer, is a Sign of great Winds and Rain.

Many *Stars* appearing in the Night and ſeeming a greater Number than uſual, and the Wind at Eaſt in Summer, foretells ſudden Rain.

Prognoſtications of Rainy Weather by the Clouds.

MAny ſmall *Clouds* at North-Weſt, in the Evening, ſhow that Rain is gathering and will ſuddenly fall.

Clouds appearing like Rocks or Towers, ſignify great Showers.

If ſmall *Clouds* grow bigger and bigger in an Hour or Two, they ſignify a great deal of Rain. On the contrary, if great *Clouds* waſte off and grow ſmaller and ſmaller, they ſignify fair Weather.

In Summer (ſays M. *Ozanam*) we apprehend a future Storm, when we ſee little Black looſe *Clouds* lower than the reſt, wandring to and fro; when at Sun-riſe we ſee ſeveral *Clouds* gather in the Weſt; and on the other hand, if theſe *Clouds* diſperſe, it ſpeaks Fair Weather.

When the *Sun* looks double or triple through the *Clouds*, it prognoſticates a Storm of long Duration.

Two or Three diſcontinu'd and ſpeckled Circles or *Rings* round the Moon, preſage a great Storm.

Pliny (in his *Nat. Hiſt.* L. 18. c. 79.) ſays, Nubes *ab Auſtro imbres portendent.*

Nubes *vehementius atræ ab Oriente, in noctem Aquam minantur: Ab Occidente, in poſterum diem.*

Si Nubes, *ut vellera Lanæ, ſpargentur multæ ab Oriente, Aquam in triduum præſagient.*

Cum in cacuminibus Montium Nubes *conſident, hyemabit.*

Prog-

Prognoſtications of Rain by the Rain-Bow.

IF after a long Drought the *Rain-Bow* appears, it ſignifies Rain. But if it appears after a long time of Wet, it ſignifies Fair Weather.

If it appears very Big, it ſignifies much Wet: But if very Red, Wind withall.

If it appears in the Morning, it ſignifies ſmall Rain, and preſently after Fair Weather.

From that Part the *Rain-Bow* firſt begins to break, or vaniſh, Winds will ariſe and bring great Showers.

If the *Rain-Bow* vaniſhes altogether, Fair Weather will enſue.

If it be broken in many Parts, Tempeſtuous Winds are gathering in the Air.

If (after it appears) the Colours grow groſſer and darken, Rain is gathering; If lighter and the Colours fairer, the contrary.

If two *Rain-Bows* appear together, it denotes fair Weather for the Preſent, and Rain 2 or 3 Days after.

A *Rain-Bow* in the Eaſt (ſays Monſ. *Ozanam*) is a Sign of great Rain, eſpecially if it be of a Bright lively Colour. A *Rain-Bow* in the Weſt preſages an indifferent quantity of Rain and Thunder: But a *Rain-Bow* in the Eaſt in the Evening, predicts Fair Weather, and if its Colour is Lively and Red, it foretells Wind.

Thus *Seneca*, lib. 1. *Nat. Quæſt.* c. 6. p. 836. ——Et bibit ingens Arcus (*ut ait* Virgilius) *cum adventat Imber. Sed non eaſdem (undecunque apparuit) minas affert. A Meridie ortus magnam vim Aquarum vehit.——— Si circa Occaſum refulſit, rorabit, & leviter impluet. Si ab Ortu, circa-ve ſurrexit, Serena promittit.*

Signs of Rain *ceaſing.*

WHEN a Shower comes ſuddenly, 'tis like to be Fair Weather again in the ſpace of Half an Hour or an Hour: For there is no *Rain* continues long that comes Suddenly; *Nullum violentum eſt diuturnum.*

Alſo, if it begin to *Rain* an Hour or Two before Day, it is like to be Fair before Noon, and to hold ſo all the reſt of the Day: But if begin to *Rain* an Hour or Two before Sun-riſing, it is like to *Rain* moſt part of the Day after, except the Rain-Bow be ſeen before it Rains.

Or, when the Air grows thick by degrees, and the Sun ſhines duller and duller, till it ſhines not at all; Or the Moon or Stars by Night: Then it is like to *Rain* 6 Hours uſually.

Alſo, when it begins to *Rain* from the South with a High Wind for 2 or 3 Hours; and then the Wind falls (and it continue *Raining* ſtill) then it is like to Rain for 12 Hours or more; and uſually *Rains* till a ſtrong Wind ariſes to clear the Air. Theſe long *Rains* ſeldom hold above 24 Hours, or ſeldom happen above Once a Year.

Prognoſtications of the Weather by Miſts.

IF the *Miſts* ariſe out of Ponds and Rivers, and there vaniſh away, it ſignifies Fair Weather. But if from thence they ariſe to the Tops of the Hills, it is like to be Rainy ſuddenly, either the ſame Day, or commonly within 2 or 3 Days.

If before Sun-riſing it be a General *Miſt* (both on the Hills and Vales) near the Full-Moon, it ſignifies Fair Weather. But if ſuch a *Miſt* be in the New of the Moon, it ſignifies Rain in the Old of the Moon: But in the Old of the Moon, it ſignifies Rain in the New.

If (ſays Monſ. *Ozanam*) after Sun-ſet, or before Sun-riſe, you obſerve a white Vapour riſing upon Waters, or Marſhes or Meads, you'll have Fair Warm Weather next Day.

Indeed I look upon *Miſts* as only thinner, uncompacted, and more rarify'd Clouds which hang upon the Earth: And tho' we don't call 'em ſo whilſt we are involv'd in 'em, yet as ſoon as they are a little elevated and drawn up, we immediately call 'em Clouds: And oftentimes they are by the Cold in the Atmoſphere, and at no great Diſtance from us, ſo condens'd, that they ſuddenly return upon us in great Show'rs of Rain: Hence 'tis a common Obſervation, that when a *Miſt* is drawn up to the Tops of the Hills, 'tis a Sign of Rain; But when we ſee the *Miſts* driven along the Valleys, the *Sun* rariſying and diſperſing them, 'tis a Sign of fair Weather. For as *Miſts* are nothing elſe but thin and rarify'd Clouds, ſo are Clouds nothing but thick, condens'd, and compacted Vapours or *Miſts*; which when ſo far condens'd as to become too ponderous to be ſupported by the Air, fall down upon us in Rain, Hail, or Snow.

Prognoſtications of the Weather by Vegetables.

'TIS very pretty to obſerve the Methods of Nature, in guarding the inſenſitive Creatures in the *Vegetable Kingdom*, againſt Harms and Inconveniencies. I have obſerv'd that many, if not moſt of 'em, do expand their Flowers and Down in Warm Sun-ſhiny Weather, and again cloſe them towards Evening, or in Rain, eſpecially at the Beginning of Flowering, when the Seed is young and tender; It is manifeſt in the Down of the *Dandelion*, and other Downs; and eminently in the Flowers of *Pimpernel*, the opening and ſhutting of which, are the Country-man's Weather-wiſer; whereby *Gerard* ſays, he foretells what Weather ſhall follow the next Day; for (ſays he) if the Flowers be cloſe ſhut up, it betokens Rain and foul Weather; contrariwiſe, if they be ſpread abroad, Fair Weather. *Ger. Herbal.* B. 2. Ch. 183. p. 494.

Likewiſe the *Trefoil* (ſays my Lord *Bacon*) ſwells in the Stalk againſt Rain, and ſo ſtands more upright; for by Wet, Stalks do erect, and Leaves bow down. *Trifolium* (ſays *Pliny*) *inhorreſcere, & folia contra Tempeſtatem ſubrigere certum eſt. Pliny* likewiſe mentions the *Wincopipe*. And ſo does my Lord *Bacon:* There is (ſays he) a ſmall Red Flower in the Stubble-Fields, which Country-people call the *Wincopipe*, which if it open in the Morning, you may be ſure of a Fair Day to follow.

The Natural Reaſon of which (according to Monſ. *Ozanam*) is this, *Plants* are a ſort of natural Hygrometers, being compos'd of an infinite Number of Fibres, *Tracheæ* or Air-Veſſels, which are like ſo many Canals or Pipes, thro' which the Moiſture of the Air, as well as the Juice of the Earth, is convey'd into all its Parts.

Plantæ *igitur* (ſays *Malpigius*) *cum ſint Viventia* (*ut conjecturari fas eſt*) *Viſceribus infixa Terræ, ab hâc, ſeu potius ab Aquâ & Aere, commixtis & percolatis à Terrâ, Reſpirationis ſuæ materiam recipiunt,*

piunt, ipſarumque Tracheæ *ab halitu Terræ, extremas radices ſubingreſſo, replentur.*

Theſe *Tracheæ* or *Air-Veſſels*, are viſible, and appear very pretty in the Leaf of *Scabious*, or the *Vine*, by pulling aſunder ſome of its principal Ribs, or great Fibres; between which may be ſeen the ſpiral *Air Veſſels* (like Threads of Cobweb) a little uncoyled: A Figure whereof Dr. *Grew* has given us in his *Anat. Plant.* Tab. 51. 52.

Vid. *Malpig.* Op. Anat. Plant. p. 15.

Dr. *Grew*'s Ant. Plant. Lib. 3. c. 3. §. 16. &c.

Mr. *Ray*'s Hiſt. Plant. L. 1. c. 4.

Signs of Fair Weather.

THE *Sun* riſing in the Morning fair and bright, and ſetting at Night bluſhing, without Spots or black Clouds near it, is one Sign of fair Weather. Thus *Pliny*, L. 18. c. 35.

Sol *purus Oriens, atque non fervens, ſerenum Diem nunciat. Si & Occidet pridie ſerenus, & oritur, tanto certior fides. Serenitatis*——

Si circa Solem *Occidentem rubeſcant Nubes, Serenitatem futuræ Diei ſpondent*——

Si ab Ortu Solis *repellentur Nubes, & ad Occaſum abibunt, Serenitatem denunciabunt.*

Si Sol *Oriens cingetur Orbe, & poſteà totus defluxerit equaliter, Serenitatem dabit.*

The *Moon*, when ſhe is 3 or 4 Days old, and has her Horns ſharp, and pointed very bright, predicts fair Weather till the Full, if not all the Month.

A bright or ſhining Circle about the *Moon*, when at Full, promiſes fair Weather for many Days.

Thus *Virgil,*

Sin Ortu in Quarto (namque is certiſſimus Auctor)
Pura, neque obtuſis per Cœlum cornibus ibit,
Totus & ille Dies, & qui naſcentur ab illo
Exactum ad Menſem, Pluviâ Ventiſque carebunt.
The *Moon*, if Four Nights Old (the ſureſt Sign)
With ſharpen'd Horns if glorious then ſhe ſhine,
Next Day, nor only that, but all the *Moon,*
Till her revolving Race be wholly run,
Are void of Tempeſts both by Land and Sea.

Hence *Pliny*, L. 18. c. 79.

Quartam Lunam *maximè obſervat Ægyptus. Si ſplendens Exorta puro nitore fulſit, Serenitatem præſagit —— Si Plenilunio per dimidium pura erit, Dies ſerenos ſignificabit.*

The *Stars* likewiſe ſhining Clear and Bright, ſeeming to dart out pointed Rays, denote Fair Weather.

Thus *Virgil,*

——*Neque inſidiis Noctis capiere ſerenæ.*
Nor ſhall a *Starry* Night thy hopes betray.
Nam neque tum Stellis *acies obtuſa videtur*——
The *Stars* ſhine ſmarter———

Alſo little *Clouds* ſinking low, as into Valleys, at South-Eaſt, or South-Weſt, are another Sign of Fair Weather.

So *Virgil,*

At Nebulæ *magis ima petunt, campoque recumbunt.*
But a blue doughty *Miſt* deſcends upon the Plain.

And *Pliny,*

Nebulæ *è montibus deſcendentes, aut Cœlo cadentes, vel in Vallibus ſidentes, Serenitatem promittunt.*

Another Sign of Fair Weather, is the Clearneſs on the Tops of Hills. *Si cacumina* Montium *pura fient, Dies ſerenus erit*, ſays *Pliny*

Another Sign are white ſcattering *Clouds*, like Fleeces of Wool, to the North-Weſt.

Miſts likewiſe, or white *Clouds*, hanging juſt over Rivers, and diſperſing no farther.

The Rain-bow alſo appearing after a Shower, and the Blue and Yellow Part of it very Bright, and the lighteſt Colour, are all Signs of Fair Weather.

Spider's Webbs in the Air, or on the Graſs and Trees, foretell much Fair and Hot Weather. Dr. *Liſter* (*Philoſoph. Tranſ.* N. 50. p. 1014.) gives us a full account of theſe *Spiders* (call'd *Lupi*) darting their Threads into the Air, and ſwimming in it. All *Spiders* that ſpin in a Thread, are the Makers of thoſe long Threads in the Air in Summer, and eſpecially towards *September*, ſo much wonder'd at, and in ſuch infinite Numbers every where. They will dart out a whole Stamen, or Sheaf at once, conſiſting of many Filaments, yet all of one Length, all divided each from the other, and diſtinct till ſome chance either ſnap 'em off or entangle 'em. The ſame ingenious Author taking notice one Day that the Air was full of theſe *Spiders* Webs, got upon the Top of the higheſt Steeple on the Minſter of *York*, and did thence diſcern them yet exceeding high above him.

Other Signs of fair Weather we have from other *Inſects*, particularly *Bees*, when they fly far from their Hives, and come late home. Great Swarms of *Gnats* preſage the ſame. So do *Glow-worms* by Night, which are a ſort of Worms with Wings, and Lanterns in their Tails, a ſort of creeping Stars, of the Beetle kind, call'd by the Greeks *Lampyrides*, à λάμπω *Luceo.* The Tail of a *Glow-worm* is made of 7 ſhelly Rings, at the laſt of which are viſible the 2 ſhining Points. The Light made by this Animal (ſays Sir *Thomas Brown* in his *Vulgar Errors*) depends upon a living Spirit, and ſeems by ſome vital Irradiation to be actuated into this Luſtre: For when they are dead, they ſhine not, nor always when they are alive, but give Light according to this Diffuſion of this Spirit, and the Protuſion of their Luminous Parts. Theſe *Inſects* are the Husbandmen's Monitors to bring in their Harveſt; as *Virgil* ſays,

> *His tandem ſtudiis Hyemem tranſegimus illam.*
> *Ver rediit, jam ſylva viret, jam Vinea frondet,*
> *Jam ſpicata* Ceres, *jam cogitat horrea Meſſor,*
> *Splendidulis jam nocte volant* Lampyrides *alis.*

Other Signs of fair Weather we have from *Birds*, as the *Larks* riſing very High, and continuing ſinging for a long time. The *Kite* alſo flying aloft, ſhows Fair and Dry Weather. The Reaſon of which (ſays my Lord *Bacon*) may be this, Becauſe the *Kite* mounts moſt into the Air of that Temper wherein he delights: For this aſpiring *Bird* affects not ſo much the Groſsneſs of the Air, as the Cold and Freſhneſs of it: For being a *Bird* of Prey, and therefore Hot, he delights in the freſh Air, and many-times flies againſt the Wind, as *Trouts* and *Salmons* ſwim againſt the Stream. And yet it is true alſo, that all *Birds* find an Eaſe in the Depth of the Air, as Swimmers do in a deep Water. And therefore when they are aloft, they can uphold themſelves with their Wings ſpread, ſcarce moving them. The like *Pliny* obſerves of the *Crane. Grues ſilentio per ſublime volitantes, Serenitatem præſagiunt.*

Swallows likewiſe flying High preſage Fair Weather. And *Plovers* or *Lap-wings* flying High, and then Low, making alſo continual Cries, foreſhow Warm Weather. The like *Virgil* elegantly remarks of the *Ravens*:

> *Tum liquidas* Corvi *preſſo ter gutture voces*
> *Aut quater ingeminant; & ſæpe cubilibus altis*
> *Neſcio quâ præter ſolitum dulcedine læti*
> *Inter ſe foliis ſtrepitant: Juvat imbribus actis*
> *Progeniem parvam dulciſque reviſere nidos.*

Haud equidem credio, quia ſit Divinitus illis
Ingenium, aut rerum Fato Prudentia major.
Verum, ubi Tempeſtas & Cœli mobilis humor
Mutavere vias, & Juppiter *uvidus Auſtris*
Denſat, erant quæ rara modo, &, quæ denſa relaxat;
Vertuntur Species Animorum, & pectora motus
Nunc alios, alios, dum Nubila Ventus agebat,
Concipiunt. Hinc ille Avium *concentus in Agris,*
Et lætæ Pecudes, *& Ovantes gutture* Corvi.

Which Mr. *Dryden* turns thus:

Then thrice the *Ravens* rend the liquid Air,
And croaking Notes proclaim the ſettled Fair.
Then round their Airy Palaces they fly
To greet the *Sun*; and ſeiz'd with ſecret Joy
When Storms are over-blown, with Food repair
To their forſaken Neſts, and callow Care.
Not that I think their Breaſts with heav'nly Souls
Inſpir'd, as Man, who Deſtiny controuls.
But with the changefull Temper of the Skies,
As Rains condenſe, and Sun-ſhine rarifies;
So turn the Species in their alter'd Minds,
Compos'd by Calms, and diſcompos'd by Winds.
From hence proceeds the *Birds* harmonious Voice,
From hence the *Crows* exult, and friſking *Lambs* rejoice.

Owls Hooting much is another Sign of Fair Weather; tho' *Owls* Hoot much both in Wet and Dry Weather, with this Difference, in Wet their Hooting is more Clamorous (*Noctua in imbre garrula,* ſays *Pliny*), but in Fair Weather, more Eaſy and Sedate, as *Virgil* ſays,

Solis & Occaſum ſervans de culmine ſummo
Nequicquam ſeros exercet Noctua *cantus.*

And *Owls* that mark the Setting-Sun declare
A Star-light Evening, and a Morning Fair.

Alſo *Halcyons* and *Coots*, and other Sea-Fowl, leaving the Shoars and flocking to Sea, is another Sign of Fair Weather.

Thus *Virgil* again,

Non tepidum ad Solem pennas in littore pandunt
Dilectæ Thetidi Alcyones———

The filmy *Goſſamer* now flitts no more,
Nor *Halcyons* bask on the ſhort Sunny Shoar.

And *Pliny* ſays, L. 2. c.47. L. 18. c. 26. L. 10. c.32.

Alcedo *ſeptem Diebus nidificat in Mari, & ſeptem poſteà fætificat; Qui Dies* HALCEDONII *dicuntur, quibus Diebus Mare placidum & navigabile eſt. Hoc ergo Signum eſt, cum* Alcedones *non pandunt alas.*

And not only *Birds*, but *Fiſh* alſo, by their frequent Riſing and Flurting upon the Surface of the Water: And *Cattle* ſeeding eagerly without looking about 'em, do foretell Fair Weather. Delphini (ſays *Pliny*) *turbato Mari ſpargentes Aquam, Tranquillitatem præſagiunt.*

Prognoſtications of the Weather by the Winds.

THE *Winds* are the Cauſe of the moſt ſudden and extraordinary Alterations of the Gravity of the Air; the Nature of the *Winds* is ſuch, that by the Experience we have of 'em, we may thence predict (very near) the Weather that will enſue for 2 or 3 Days after. We know (for Example) in this Climate, that a *South Wind* generally brings Rain, and a *Weſt Wind* yet more (which is the predominant *Wind* here, becauſe the Ocean lies on that Side); That the *North Wind* brings Fair Weather, as well as the *Eaſt Wind*, which does not laſt ſo long as the former. Therefore the *North Eaſt*, and *South Weſt* Winds are the only Winds that I ſhall inſiſt upon at preſent.

It has been an Obſervation made by ſome, that have been very Curious Obſervers of the Weather for ſor many Years, That in 8 Years time there is as much *South* and *Weſt* Wind, as *North* and *Eaſt* Wind; and conſequently as many Wet Years as Dry Years.

Now I will give you a Rule how you may know when the *Wind* will ſit in one of theſe 2 Points for 2 or 3 Months together, for the moſt part.

Firſt, for the *North-Eaſt* Wind; When the *Wind* turns to this Point, and continues 2 Days without Rain, and turns not *South*-ward the 3^{d} Day, nor Rains, then it is like to continue *North-Eaſt* for 8 or 9 Days without Rain, and then return into the *South*.

If the *Wind* turn out of the *South* to the *North-Eaſt* again, and continue in that Point without Rain for 2 Days, and turn not *South* the 3^{d} Day, nor Rain the 3^{d} Day, it is like to continue *North-Eaſt* for 2 Months, or 3 for the moſt part. The *Wind* will finiſh theſe Turns towards the *North* in 3 Weeks time.

Secondly, for the *South-Weſt* Winds: When the *Wind* has been in the *North* for 2 Months or more for the moſt part, and comes to the *South*, uſually there are 3 or 4 Fair Days at firſt, and then the 4th or 5th Day comes Rain, or elſe the *Wind* turns *North*, or continues Dry ſtill.

If it return to the *South* within a Day or Two without Rain, and turn *North*-ward with Rain, and return into the *South* the 1ſt or 2d Day as before, 2 or 3 times together after this ſort, then it is like to be in the *South* or *South-Weſt* 2 or 3 Months together for the moſt part, as it was in the *North* before. The *Wind* will finiſh theſe Turns in a Fort'night.

I mention not the *Eaſt* or *Weſt* Winds, becauſe the Rain comes uſually from the *South*, or in the Shifting of the *Wind* from the *South* to the *North*.

As for the Droughth, the *Wind* is for the moſt part *North-Eaſt*.

If it be fair Weather out of the *South* for a Week together (which is not uſual) it is like to be great Droughth, when it has been a long time of Rain out of the *South* before.

Uſually the *Wind* turns from the *North* to the *South* quietly without *Rain*, but comes back again into the *North* with a ſtrong *Wind* and *Rain*. The greateſt *Winds*, which blow down Houſes and Trees, uſually come by the turning of the *Wind* out of the *South*, by the *Weſt*, into the *North*, which drives away Rain, and clears the Air.

Pliny (in his *Nat. Hiſt.* L. 2. c. 47. and L. 18. c. 34.) gives this Account of the Winds.

Auſter *Africæ ſerenus*, Aquilo *nubilus*. *Omnes* Venti *vicibus ſuis ſpirant. De ratione eorum Menſtrua, Quarta maxime* Luna *decernit*—— Auſtro *majores flatus eduntur quàm* Aquilone: *quoniam ille infernus ex imo Maris ſpirat, hic ſummo. Ideoque poſt* Auſtros *noxii præcipuè* Terræ-motus. *Noctu* Auſter, *interdiu* Aquilo *vehementior. Et ab Ortu flantes diuturniores ſunt ab Occaſu flantibus.* Septentriones *impari ferè deſinunt numero*—— Sol *& auget, & comprimit flatus. Auget exoriens Occidenſque, comprimit Meridianus æſtivis temporibus. Itaque medio Diei aut noctis plerumque ſopiuntur: qui aut nimio frigore, aut Æſtu, ſolvuntur. Et imbribus* Venti *ſopiuntur*.

Vulturnus (*Anglicè* South-Eaſt *Wind*) *ſi à ſerenâ Cœli Parte cœperit flare, non durabit in noctem: At* Subſolanus (Eaſt-*Wind*) *in majorem partem noctis extenditur. Quiſquis erit* Ventus, *ſi fervidus ſentietur, pluribus diebus permanebit.* Aquilonem (North-Weſt *Wind*) *prænunciat Terra ſiccenſcens repentè,* Auſtrum (South-*Wind*) *humeſcens rore occulto.*

Prognoſtications of Windy *Weather from the* Moon.

C*orna* Lunæ (ſays *Pliny* in his *Nat. Hiſt.* L. 18. c. 79.) Septentrionale *acuminatum atque rigidum, illum præſagit* Ventum: *inferius,* Auſtrum: *Utraque recta, noctem* Ventoſam. *Si Quartam orbis rutilus cingit,* Ventos *& Imbres præmonebit.*

Varro's Opinion is this, *Si Quarto die* Luna *erit directa, magnam Tempeſtatem in Mari præſagiet, niſi Coronam circa ſe habebit, & eam ſinceram: quoniam illo modo non ante Plenam* Lunam *hiematurum oſtendit.*

Si Plenilunio *per dimidium pura erit, dies ſerenos ſignificabit: ſi rutila,* Ventos: *nigreſcens, Imbres.*

Si caligo orbis nubem incluſerit, Ventos, *qua ſe ruperit: ſi gemini Orbes cinxerint, majorem Tempeſtatem. Et magis, ſi tres erunt, aut nigri, interrupti atque diſtracti*——

Si plena circa ſe habebit Orbem, ex quâ parte is maximè ſplendebit, ex eâ Ventum *oſtendet: Si in Ortu* Cornua *craſſiora fuerint, horridam Tempeſtatem. Si ante Quartam non apparuit,* Vento Favonio *flante, Hyemalis toto Menſe erit. Si Decimo ſexto vehementius flammea apparuerit, aſperas Tempeſtates præſagiet.*

Sunt & ipſius Lunæ *octo Articuli, quoties in angulos* Solis *incidit, pleniſque inter eos tantum Obſervantibus Præſagia ejus,* i. e. *Tertia, Septima, Undecima, Decima-quinta, Decima-nona, Vigeſima-tertia, Vigeſima-ſeptima, & Interlunium.*

Signs of the Winds *changing.*

WHen the *Sun* riſes with many pale Spots appearing in its Orb, and part of it hid in a Cloud, the *Wind*, (in what Point ſoever it be) will ſoon turn to the *South*.

When the *Wind* has been ſettled 24 Hours, or more, in any of the full Points (as *North*, *Eaſt*, *Weſt*, or *South)* when it begins to turn, it will ſettle till it comes to the oppoſite Point, as from the *North* to the *South*, and ſo from full *Eaſt* to full *Weſt*; and ſo of the angular Points, as from the *North-Eaſt*, to *South-Eaſt*.

Let the *Wind* be in what Quarter it will, upon the *New-Moon* it preſently changes.

When the Generality of the Clouds rack, or drive with the *Wind* (tho' there are many in little Fleeces, or long Strakes, lying higher and appearing not to move) the *Wind* is flagging, and will quickly change and ſhift its Point.

Signs of Tempeſts *ariſing.*

MY Lord *Bacon* mentions theſe as Prognoſticks; The Reſounding of the Sea upon the Shoar, and the Murmur of Winds in the Woods, without apparent Wind, ſhow *Wind* to follow. For ſuch Winds, breathing chiefly out of the Earth, are not at the firſt perceiv'd, except they be pent by Water or Wood. And therefore a Murmur out of the Caves likewiſe portends as much. So *Virgil:*

Continuo Ventis *ſurgentibus aut freta Ponti*
Incipiunt agitata tumeſcere, & aridus altis
Montibus

Montibus *audiri fragor ; aut reſonantia longe*
Littora *miſceri,&* Nemorum *increbeſcere murmur.*
For e'er the riſing *Winds* begin to roar,
The working *Seas* advance to waſh the *Shoar:*
Soft whiſpers run along the leavy *Woods,*
And *Mountains* whiſtle to the *Murm'ring Floods.*

Again,

Sæpe levem Paleam *&* Frondes *volitare caducas*
Aut ſummâ nantis in Aquâ concludere Plumas.
And *Chaff* with eddy Winds is whirl'd around,
And dancing *Leaves* are lifted from the Ground,
And floating *Feathers* on the Waters play.

Hence *Pliny* almoſt *Verbatim,*

Equidem & Montium *ſonitus,* Nemorumque *mugitus prædicunt : Et ſine Aurâ quæ ſentiatur,* Folia *ludentia.* Lanugo Populi (*Ang.* Poplar-Tree) *aut* Spinæ, *volitans: Aquis* Pluma *innatans. Atque etiam in Campis Tempeſtatem venturam præcedens ſuam fragor.*

And thus *Horace,* Ode 17. Book 3^d^.

——*Cras* foliis *Nemus*
Multis, & algâ littus inutili
Demiſſa Tempeſtas ab Euro
Sternet, Aquæ niſi fallit Augur
Annoſa Cornix——

To-morrow furious *Winds* ſhall ſpread
The troubl'd Shoar with uſeleſs Weed,
And fill the Woods with *ſcatter'd Leaves,*
Unleſs the Cawing *Crow* deceives;
The *Crow* that ſtill foretells a Rain
And Storm, and never Caws in vain.

Another Sign of ariſing *Tempeſts,* is when the Brightneſs of the ſmaller Stars are on a ſudden obſcur'd: For the upper Regions of the Air perceive the Collection of the Matter of *Tempeſts* and Winds before the Air here below. *Cœli quidem murmur non dubiam habet ſignificationem,* ſays *Pliny.* And therefore the Obſcuring of the ſmaller Stars, is a Sign of Tempeſts following. *Vid.* Lord *Bacon*'s Inquiſitio de Ventis. Thus again *Pliny, Cum repentè ſtellarum fulgor obſcuratur, & id neque nubilo, neque caligine, Pluvia aut graves denunciantur* Tempeſtates.

The Air and Fire (ſays my Lord *Bacon*) have ſubtil Perceptions of the *Wind ariſing*, before Men find it. We ſee the trembling of a *Candle* will diſcover a *Wind*, that otherwiſe we do not feel; and the Flexious Burning of *Flames*, ſhows the Air is beginning to be unquiet; and ſo do *Coals* of *Fire*, by caſting off the Aſhes more than uſual. The Reaſon is, becauſe no *Wind* at firſt, till it has agitated the Air, is apparent to the Senſe, but *Flame* is eaſier to move than Air. And for the *Aſhes*, 'tis no wonder if *Wind* unperceiv'd ſhake them off, for we uſually try which way the *Wind* blows, by caſting up *Graſs* or *Chaff*, or ſuch light things into the Air—— Thus far my Lord *Bacon*: which ſeems to be nothing elſe but a Tranſlation out of *Virgil* and *Pliny*.

Nec nocturna quidem carpentes penſa Puellæ
Neſcivere Hiemem; teſtâ cum ardente viderent
Scintillare Oleum; *& putris concreſcere* Fungos.
The Nightly Virgin, while her *Wheel* ſhe plies,
Foreſees the Storm impending in the Skies,
When ſparkling *Lamps* their *ſputt'ring Light* advance,
And in the Sockets *Oily Bubbles* dance.

And *Pliny* more fully,

Terreni Ignes *ſignificant*: Pallidi *namque*, murmuranteſque, *Tempeſtatum nuncii ſentiuntur. Pluviæ etiam in* Lucernis Fungi. *Si* flexuoſè *volitet* Flamma, *Ventum. Et* Lumina *cum ex ſe Flammas elidunt, aut vix dum accenduntur. Item cum in eo pendentes coacervantur* Scintillæ: *Vel cum tollentibus ollas* Carbo *adhæreſcit: aut cum contectus* Ignis *è ſe favillam diſcutit,* Scintillamque *emittit: vel cum* cinis *in foco concreſcit, & cum* Carbo *vehementèr perlucet.*

The Reverend and Ingenious Mr. *Robinſon* (in his *Nat. Hiſt.* of *Weſtmorland,* p. 7. &c.) gives us this Account of the Origin of *Wind*—— That in the greateſt Probability, it proceeds from vaſt Swarms of Nitrous Particles ariſing from the Bottom of the Sea, which being put into Motion, either by the Central Fire,or by that Heat and *Fermentation* which abound in this Great Body of the Earth: And therefore this firſt Commotion, excited by the ſaid Fermentation, we call *A Bottom-Wind,* which is preſently diſcover'd by *Porpices* and other Sea-Fiſh, which delight in Sport and Play upon the Waves of the Sea; who by their Playing, give the Mariners the firſt Notice of an approaching Storm. When theſe Nitrous Swarms are riſen towards the Surface of the Sea, in a dark Night, they cauſe ſuch a *Shining Light* upon the Waves, as if the Sea were on fire; and being deliver'd from the brackiſh Water, and receiv'd into the Open Air, thoſe Fiery and Shining Meteors which fix upon the Maſts and Sides of the Ships, and are only Nitrous Particles condenſed by the circumambient Cold, and like that which the *Chymiſts* call *Phoſphorus,* or Artificial Glow-worm, ſhine and caſt a Light, but have no Heat: This gives to Mariners the 2^d^ Notice that the *Storm* is riſing; for upon the firſt breaking out of the Wind, the Sea begins to be rough, the Waves ſwell and riſe, when at the ſame time the Air is calm and clear.

This boiling *Fermentation* of the Sea cauſes the Vapours to ariſe, which by the Intenſeneſs of the circumambient Cold, is condenſed into thick Clouds, and falls down in Storms of Wind and

Rain, firſt upon the Sea from whence they roſe, and then the attractive Power of the Mountain-Cold, by a ſecret Magnetiſm, between Vapour and Cold, attracts the Wateriſh Vapours, intermixt with Nitrous Particles, to the high Tops of Mountains and Hills, where they hang hovering in thick Fogs and Wateriſh Miſts, until the Atmoſpherical Heat rarifies the Nitrous Part of the Fog, which is always uppermoſt, and appears white and tranſlucent, into brisk Gales of Wind, and the Intenſeneſs of Atmoſpherical Cold, having attracted the Vapours into the colder Regions of the Air, where, being condens'd into Clouds, the Wind breaks, diſſipates, and drives them before it till they fall down in Rain, and water the Surface of the Earth; And this ſeems to be the Reaſon why, in *Egypt*, and thoſe level Countries, where they have no Mountains, they have little Wind, and leſs Rain. Thus far this ingenious Author. And no doubt but the very ſame Obſervations may be made upon Eruptions from the Caverns of the Earth, as well as the Sea.

What ſeems to countenance this Author's Opinion, is a late Account of a *Phænomenon* in the Sea (mention'd in Mr. *Read*'s Weekly Journal, N° 1885) related by a Nameſake (if not Relation) of this Author, as well as by Mr. *John Biſs*, which is as follows— A Prodigy has lately happen'd about the Iſland of *Terſeira* or *Tercera* (an Iſland of the Atlantick Ocean, between *Africa* and *North-America*, the Chief of the *Azores*) 17 Leagues diſtant S E. from it, in and about the 12*th* to the 20*th* of *Nov.* laſt 1720. by Fires which break out on the Surface of the Sea, with a moſt violent Impetuoſity, throwing up Pumice-ſtones, and other Combuſtibles, and has form'd an *Iſland* of Three Leagues long, and as many broad, having conſiderable Height, and

Mountainous, with Five *Vulcanoe's*, making a moſt hideous Noiſe like Thunder or great Guns, and a *Cloud* proceeding from it, breaking into ſmall *Rain* of *Sand* inſtead of Water, and ſmelling like *Brimſtone*——This aſtoniſhing Irruption caus'd a great *Earth-quake* in the ſaid *Iſland*, which threw down a great many Houſes in the City of *Angra*, and the adjacent Parts. And in *May* following it was ſtill burning with Fire and Smoke and roaring Noiſe.

For a farther Account of the Winds, the Cauſe of 'em, and the Influence they have upon the Weather in moſt Parts of the World, I ſhall (for Brevity ſake) refer the curious Reader to Mr. *Lowthorp*'s Abridgment of the *Philoſ. Tranſ.* from p. 129. to p. 141. of Vol. II. And proceed to more common Obſervations and Signs of Wind, and ſudden *Storms ariſing*, which are as follow,

If at *Sun-riſing* pale Spots ſeem to appear in its Orb, and dazzle there, ſtrong *Winds* will enſue from the *South*, the Wind ſoon ſhifting to that Point in whatever Quarter it was before.

If there appear fiery Spots, or thoſe of a reddiſh Colour, in the *Sun* upon its Setting, much Wind will enſue ſpeedily. And oftentimes a Red lowring Morning is the Fore-runner of *Wind*.

If the *Moon* bluſhes, and is Redder than uſual, *Winds* are engendering, and *Storms* will ariſe.

Alſo a Reddiſh Circle about the *Moon* at the Full, denotes much *Wind*.

Meteors (or, as common People call 'em, *Stars ſhooting*) and ſpreading a long Train of Light, fore-run *Winds* that will ſoon enſue.

Thus *Virgil*,

Sæpè etiam Stellas, *Vento impendente, videbis*
Præcipites Cælo labi, noctiſque per umbram
Flammarum longos à tergo albeſcere tractus.

And oft before tempeſtuous *Winds* ariſe
The *ſeeming Stars* fall headlong from the Skies,
And ſhooting thro' the Darkneſs, gild the Night
With ſweeping Glories, and long Trails of Light.

Hence *Pliny*,

Diſcurrere Stellæ *videntur interdum, Ventique protinus ſequuntur, in quorum Parte ita præſagivere.* *Si volitare plures* Stellæ *videbuntur, quo feruntur albeſcentes,* Ventos *ex iis Partibus nunciabunt.* *Aut ſi curſitabunt, certos: Si id in pluribus Partibus fiet, inconſtantes* Ventos *effundent.*

Another Sign of great *Tempeſts* ariſing, is a murmuring Noiſe of Thunder from the *North.*

Alſo ſmall ſcatter'd *Clouds* in the *South-Weſt*, that fly high, lie as it were in Ridges, and ſeem not to move, engender *Winds*, often producing *Whirl-winds.*

Pliny (*Nat. Hiſt.* l. 18. c. 79) ſays,

Nubes *cum ſereno Cœlo feruntur, à quâcunque Parte id fiet, expectentur* Venti: *Si eodem loco globabuntur, appropinquante* Sole *diſcutientur.* *Et hoc ſi ab* Aquilone *fiat,* Ventos. Sole *occidente ſi ex utrâque Parte ejus Cœlum petent,* Tempeſtatem *ſignificabunt.*

Eſt & Aquarum *ſignificatio.* Mare *ſi tranquillum in portu à curſu ſtabit, & murmuraverit intra ſe,* Ventum *prædicit. Littora Ripæque ſi reſonabunt tranquillo, aſperam* Tempeſtatem: *Item Maris ipſius tranquillo ſonitus, ſpumæ-ve diſperſæ, aut Aquæ bullantes.* Pulmones marini *in Pelago, plurium dierum Hyemem portendunt.* (Theſe *Pulmones marini* are accounted ſenſeleſs Fiſhes, and yet give certain Notice to the Mariners of approaching *Storms.*) *Sæpè & ſilentio intumeſcit Mare, flatuque altius ſolito jam intra ſe eſſe* Ventos *fatetur.*

Signs

Signs of Tempeſts *ceaſing.*

A Haſty Shower of Rain falling when the *Wind* has rag'd for ſome Hours, ſoon allays it.

If the Water ruckles much, and frequent Bubbles ariſe, the *Storm* is of a ſhort continuance.

If the Bird call'd the *Halcyon*, or *King-Fiſher*, attempts the Seas when the *Wind* blows hard, its a Sign of its abating.

The merry Chiripping of *Sparrows*, and *Moles* coming out of their Holes, are Signs of *Storms ceaſing*.

Signs of Thunder *and* Lightning.

IT has been the Obſervation of thoſe that have had many Years Experience of the Weather, That when the *Wind* in the Summer Time has been *South* 2 or 3 Days, and it grows very Hot, and when you ſee *Clouds* ariſe with great white Tops like Towers, as if one *Cloud* were on the Top of another, and join'd together with Black on the nether Side, that then it is like to be *Thunder* and Rain ſuddenly in many Places.

If there ariſe Two ſuch *Clouds* with *Thunder* in them, the one on the one ſide of you, and the other on the other, then beware.

Another Sign of approaching *Thunder*, are *Meteors* ſhooting in the Night in Summer-time, for they denote the Air to be inflam'd with much Heat, and conſequently that *Thunder* and *Lightning* will enſue.

Likewiſe many *Chops* and *Clefts* in the Ground, ſhow that abundance of Nitrous and Sulphureous Vapours have been exhal'd from the Earth, and got up amongſt the Clouds, and there being impatient of Reſtraint, after long ſtrugling and rumbling, at laſt burſt through with a great Noiſe, which we call *Thunder*, and a ſudden Flaſh, which we call *Lightning*, which are both inſtantaneous, tho' the one is ſeen before the other is heard, becauſe the Senſe of Seeing is quicker than that of Hearing.

If no *Clouds* appear in ſultry Weather, and the *Sun* ſets red and fiery, great Flaſhes will appear in the *North*, and *North-Weſt*, which is call'd *Fulgetrum*, or Lightning without Thunder; becauſe meeting with no Oppoſition, tho' ſpringing from the ſame Cauſe, the Noiſe is not heard. *Pliny* (*Nat. Hiſt.* l. 18. c. 79.) ſays, *Cum Æſtate vehementius tonuit quam fulſit, Ventos ex eâ parte denunciat: contra, ſi minus tonuit, Imbrem. Cum ſereno Cœlo* Fulgetræ *erunt &* Tonitrua, *adhiemabit. Atrociſſimè autem, cum ex omnibus quatuor Partibus Cœli* fulgurabit. *Cum ab* Aquilone *tantum, in poſterum diem Aquam portendit. Cum à* Septentrione, *Ventum eum. Cum ab* Auſtro, *vel* Coro, *aut* Favonio, *Nocte ſerenâ fulguraverit, Ventum & Imbrem ex iiſdem Regionibus demonſtrabit.* Tonitrua *matutina ventum ſignificant, Imbrem meridiana.*

Virgil,

At Boreæ *de parte trucis cum* Fulminat, *& cum*
Eurique Zephyrique *tonat Domus; omnia plenis*
Rura natant foſſis, atque omnis Navita Ponto
Humida vela legunt ——

But when the winged *Thunder* takes his way
From the cold *North*, and *Eaſt* and *Weſt* engage,
And at their Frontiers meet with equal Rage,
The Clouds are cruſh'd, a glut of gather'd Rain
The hollow Ditches fills, and floats the Plain,
And Sailors furl their dropping Sheets amain.

Signs of Snow.

C*LOUDS* like Woolly Fleeces appearing high, and moving heavily; the Middle a Darkiſh Pale, and the Edges White, carry *Snow* in them, that in Winter frozen in Sheets by Cold *Eaſt*, *North-Eaſt*, or *North-Weſt* Winds, preſſing hard on the Atmoſphere (no longer able to bear 'em up) ſhiver in the Fall and break into Flakes. If the *Clouds* be preſs'd nearer the Earth, the Vapours ſo frozen are groſſer, and the Flakes larger; But more remote, thinner, and ſo fall in little Flakes.

The *Sun*'s looking Pale at its Riſing, the much Lowing of *Cattle* in the Field, the Croaking of *Ravens*, and *Birds* flagging their Wings, are all Signs of approaching *Snow*.

Signs of Hail.

IF the *Sun* at its Riſing caſt a glittering Light, as if it reflected on ſome Lucid Matter, tho' few or no Clouds appear at that time; the Vapours are condenſed in the Cold Region, and fore-running into Clouds that will ſcatter violent *Hail*.

If (in the Morning) the *Eaſtern Skies*, before the *Sun*-riſing, look Pale; and refracted Rays appear in thick Clouds, great Storms of *Hail* will enſue, to the great damage of Corn and Fruits.

Thus *Virgil*,

Aut ubi ſub lucem denſâ inter Nubila ſeſe
Diverſi rumpent Radii, aut ubi pallida *Surget*
Tithoni *croceum linquens* Aurora *cubile;*
Heu, malè tum mitis defendet Pampinus *Uvas*,

Tam multa in Tectis *crepitans ſalit horrida* Grando.
Or, if *Aurora,* with half-open'd Eyes,
And a *Pale* ſickly Cheek, ſalute the Skies,
How ſhall the *Vine,* with tender Leaves, defend
Her teeming Cluſters, when the *Storms* deſcend,
When riddy *Roofs* and Tiles can ſcarce avail
To bar the Ruin of the ratling *Hail?*

Pliny ſays,

Si cacumina Montium gravida fient, Nube candicante (quod vocant Tempeſtatem Albam), Grando *imminebit.*

If the *Clouds* look Fleecy, Dusky, White inclining to Yellow, and move but heavily, tho' the Wind be pretty rough, the Vapours compoſing them are engender'd and frozen, and ratling *Hail* enſues.

If the *Clouds* appear of a Whitiſh Blue and expand much, it will be ſmall *Hail* or Driſling (*i. e.* frozen Miſts); for that happens in the Winter or Spring, when it cannot be carry'd high enough to be condenſed by a greater quantity of Cold, becauſe the Refracted Rays of the *Sun* are but weak, and this appears by a curdling in the *Clouds* as they Riſe, and in appearance expand themſelves.

Signs of Cold *and* Froſty Weather.

THE *Sun*'s ſetting Red in a Miſt, and broader than uſual, and a White Fog creeping low in a Marſhy Ground, ſhow the Air is condenſing into Cold.

The *Moon* ſhining Bright, with ſharp Horns after the Change, ſhows the Air is rarifying, and that Cold Winds will ſoon ſet in to freeze the Earth.

The *Stars* looking Bright and twinkling much, denotes a Cold Air, engendring Froſts.

The *Sky* ſeeming fuller of Stars than uſual, and the Wind ſuddenly ſhifting to the Eaſt, or North-Eaſt, after the Change of the Moon, in the Winter, denotes a ſettling Froſt of long Continuance.

Starlings, *Feldefares*, and other Birds of a hot Nature, haſt'ning in great Flocks from the Northern, to the Southern Climates: And *Swallows* going away ſooner than uſual, denote a Cold Seaſon to enſue.

Thus Mr. *Dryden* in his *Hind* and *Panther:*

The *Swallows* (privileg'd above the reſt
Of all the Birds, as Man's familiar Gueſt)
Purſue the *Sun* in Summer brisk and bold,
But wiſely ſhun the perſecuting Cold.
When frowning Skies begin to change their Chear,
And Time turns up the wrong Side of the Year,
They ſeek a better Heav'n and warmer Climes.
But whether Upward to the Moon they go,
Or dream the Winter out in Caves below,
Or hawk at Flies elſewhere, concerns us not to know.

Another Sign of a Hard-winter approaching, is *Birds* laying up *Hawes* and *Sloes*, and other Stores, in old Neſts, or hollow Trees.

Alſo *Cold Dews*, and Morning Rymes, about St. *Bart'olmew-tide*; and *Hoar-froſts* in the Morning about *Michaelmas-tide*, foretell a hard Winter.

Sea-Py's flocking from Salt to Freſh Waters, ſignify a ſudden Alteration of Weather to much Cold.

And *Owls* Hooping often with a lowder note than uſual, ſignify approaching Froſt.

Little *Clouds* hovering low in the North, when none appear any where elſe, fore-run Cold freezing Winds and Snow. Thus *Pliny*, *Si ante Solis exortum*

Nubes *globabuntur*, *Hyemem aſperam denunciabunt.*

Pliny's farther Remarks are theſe——

Sunt in ſigno Cancri *duæ Stellæ parvæ,* Aſelli *appellatæ*, *exiguum inter illas ſpacium obtinente* Nubeculâ *quam* Præſepia *appellant: Hæc cum Cœlo ſereno apparere deſierit*, *atrox Hyems ſequitur. Si alteram earum Aquiloniam caligo abſtulit*, Auſter *ſævit: Si Auſtrinam*, Aquilo. *Arcus cum ſunt duplices, Pluvias nunciant: à Pluviis*, *Serenitatem non perinde certam. Circuli novi circa Sidera aliqua*, *Pluviam.*

Autumni ſerenitas ventoſam Hyemem facit.

Signs of Froſt *breaking.*

THE *Sun*'s looking Wateriſh at its Riſing, is one Sign that the Froſt will break.

The *Sun*'s ſetting in bluiſh Clouds, and caſting refracted Rays into them, is another Sign.

The *Stars* looking Dull upon the Matter, and the *Moon's* Horns blunted, bid the Froſt prepare to be gone.

The *Wind* having held long, and extreamly Sharp in one Point, and at laſt ſuddenly ſhifting, brings a Relaxation, if not a thorough Thaw.

Signs of Hard Winters.

LORD *Bacon*'s Prognoſticks of Hard Winters, are as follow:

The Predictions of Cold and Long *Winters*, and Hot and Dry Summers, are good to be known, as well for the Diſcovery of the Cauſes, as for divers Proviſions. If Wainſcot or Stone, that have been us'd to *ſweat* (as they call it) be more Dry in the

Beginning of Winter, or the Drops of Eaves of Houſes come down more ſlowly than they uſe, it portends a *Hard* and *Froſty Winter*. The Cauſe is, for that it ſhows an Inclination of the Air to Dry Weather, which in Winter is ever join'd with Froſt.

Generally a *Moiſt* and *Cool Summer* portends a a Hard Winter. The Cauſe is, for that the Vapours of the Earth are not diſſipated in the Summer by the Sun; and ſo they rebound upon the Winter.

A *Hot* and *Dry Summer*, and eſpecially if the Heat and Drought extend far into *September*, portends an open Beginning of Winter, and Cold to ſucceed toward the latter Part of the Winter, and the Beginning of the Spring. For till then the former Heat and Drought bear the Sway, and the Vapours are not ſufficiently multiply'd.

An *Open* and *Warm Winter*, portends a Hot and Dry Summer: for the Vapours diſperſe into the Winter Showers; whereas Cold and Froſt keep them in, and tranſport them into the late Spring and Summer following.

Birds that uſe to change Countries at certain Seaſons, if they come Earlier, do ſhow the Temperature of Weather, according to that Country whence they came: As the *Winter-Birds*, (namely, *Woodcocks*, *Feldefares*, and *Snipes*, &c.) if they come Earlier, and out of the Northern Countries, with us ſhow Cold Winters. And if it be in the ſame Country, then they ſhow a Temperature of Seaſon, like unto that Seaſon in which they come, as *Swallows*, *Nightingales*, *Cuckoes*, *Marlots* and *Batts*, that come towards Summer, if they come Early, ſhow a Hot Summer to follow.

It is an Obſervation among Country-People, that thoſe Years in which we have Store of *Haws* and *Heps*, do commonly portend Cold Winters; and they aſcribe it to Providence, that reaches to the Preſervation of Birds in ſuch Seaſons. The natural Cauſe alſo may be the want of Heat and Abundance of Moiſture in the precedent Summer, which puts-forth thoſe Fruits, and muſt needs leave great Quantity of Cold Vapours not diſſipated, which cauſes the Cold of the Winter following.

Signs of Peſtilential *Seaſons.*

IF the Year (ſays *Hippocrates*) prove to be for the moſt part Dry, acute Fevers muſt be expected. The Reaſon of which is plain, for by exceſſive Dry Weather, the Body is drain'd of its natural Moiſture, ſo that nothing remains behind, but viſcid and dry Humours, unfit for Circulation. The Tubuli of the Skin are parch'd up, and Perſpiration hinder'd, whence proceed innumerable Diſtempers, Inflammations and acute Fevers.

If the Winter Seaſon (ſays the ſame Author) be Dry and Cold, and the Spring Rainy, and ſubject to Southerly Winds, it muſt neceſſarily fall out that in Summer, acute Fevers, Rheums in the Eyes, and bloody Fluxes happen, eſpecially to thoſe who are of a Moiſt Conſtitution. The Reaſon of which is this, By great Dryneſs and Cold, the ſecretory Ducts are contracted, and the Liquids grow viſcid, becauſe Perſpiration is hereby hinder'd. For too great Cold hinders Perſpiration, and contracts the Fibres as much as too great Heat. Which Viſcidity, being diſſolv'd and fermented by the ſupervening Moiſt Seaſon, is diſpos'd to Putrefaction.

But if the Winter be Southerly, Hot, and Rainy, and the Spring Northerly and Dry, then it is often an Occaſion of Abortions in Women, or elſe the

Production of weak and diſeas'd Children. To others an Occaſion of Bloody Fluxes, and Inflammation of Eyes; and to Old People, Rheums and Catarrhs, which ſhortly kill 'em. For by ſuch an unſeaſonable Warmth and Rain, the Bodies, eſpecially of Women, are render'd lax, heavy, and infirm. And this is the Reaſon why ſuch a Seaſon is ſo pernicious both to very Young and Old People. But Middle-aged People may overcome it, by the Help of their ſtrong Conſtitution to digeſt ſuch viſcid and putrid Humours, as are occaſion'd by ſuch a heavy Air.

If the Summer be Dry and the Wind Northerly, but the Autumn Rainy and the Wind Southerly, then violent Pains in the Head, Coughs, Hoarſeneſſes, and Rheums, and to ſome Conſumptions, are to be expected in the Winter following. For by the Cold of the Summer and Heat of Autumn, Human Bodies grow Coſtive, Perſpiration is obſtructed, and in time the Upper Parts of the Body, eſpecially the Head, are over-charg'd with viſcid Humours, which are the Cauſes of ſuch Diſtempers of the Head and Lungs.

My Lord *Bacon* ſays, it has been obſerv'd, that thoſe Years are Peſtilential and Unwholſome, when there are great Numbers of *Frogs, Flies,* and *Locuſts*, &c. The Cauſe is plain, for that thoſe Creatures being ingender'd of Putrefaction, when they abound, ſhow a great Diſpoſition of the Year, and Conſtitution of the Air, to Diſeaſes of Putrefaction. The Wind blowing much from South without Rain, and Worms in Oak-Apples, as well as Plenty of *Frogs* and *Flies,* ſhow the like. It was obſerv'd in the Great *Plague* in 1676, that there was ſeen in divers Ditches and Low Grounds about *London,* many *Toads* that had Tails 2 or 3 Inches long at leaſt, whereas *Toads* uſually have no Tails at all;

which

which argues a great Diſpoſition to Putrefaction in the Soil and Air. It is reported likewiſe that *Roots* (ſuch as *Carrots* and *Parſnips*) are more Sweet and Luſcious in Infectious Years than others.

Great and *Early Heats* in the Spring (particularly in *May*) without Winds, portend *Peſtilential* Seaſons.

A *Dry March* and a *Dry May*, portend a wholſome Summer, if there be a *Showry April* between; But otherwiſe it is a Sign of a *Peſtilential* Year. And generally Years with little Wind or Thunder portend the ſame.

Great *Droughts* in Summer, laſting till toward the End of *Auguſt*, and ſome gentle Showers upon them, and then ſome Dry Weather again, do portend a *Peſtilential* Summer the Year following: For about the End of *Auguſt*, all the Sweetneſs of the Earth which goes into Plants or Trees is exhal'd (and much more if the *Auguſt* be dry) ſo that nothing then can break forth of the Earth but a groſs Vapour, which is apt to corrupt the Air; and that Vapour by the firſt Showers, if they be gentle, is releaſed, and comes forth abundantly. Therefore they that come Abroad ſoon after thoſe Showers, are commonly taken with Sickneſs. And in *Africa* no-body will ſtir out of doors after the firſt Showers. But if the Showers come vehemently, then they rather waſh and fill the Earth, than give it leave to breath forth Preſently. But if Dry Weather come again, then it fixes and continues the Corruption of the Air upon the Firſt Showers begun, and makes it of ill Influence even to the next Summer, except a very Froſty Weather diſcharge it, which ſeldom ſucceeds ſuch Droughts.

The Leſſer Infections of the *Small-Pox*, *Purple Fevers*, and *Agues* in the Summer precedent, and hovering all Winter, do portend a great *Peſtilence* in the Summer following: For Putrefaction does not riſe to its height at once.

It were a good way to lay a Piece of raw Fleſh or Fiſh in the open Air for Trial, and if it putrefy quickly, it is a Sign of a Diſpoſition in the Air to Putrefaction. And becauſe you cannot be inform'd, Whether the Putrefaction be quick or late, except you compare this Experiment with the like Experiment in another Year; it were not amiſs in the ſame Year, and at the ſame Time, to lay one Piece of Fleſh or Fiſh in the open Air, and another of the ſame kind and bigneſs within Doors: For I judge that if a general Diſpoſition be in the Air to putrefy, the Fleſh or Fiſh will ſooner putrefy Abroad where the Air is ſtronger and has more Power, than the Houſe where it is weaker and has leſs, being many ways corrected. And this Experiment wou'd be made about the End of *March*; for that Seaſon is likeſt to diſcover what the Winter has done, and what the Summer following will do upon the Air. And becauſe the Air no doubt receives great Tincture and Infuſion from the Earth, it were good to try that Expoſing of Fleſh or Fiſh both upon a Stake of Wood ſome height above the Earth, and upon the Flat or Superficies of the Earth.

It has been noted by the Ancients, That *Southern Winds* blowing much without Rain, do cauſe a Feveriſh Diſpoſition of the Air; but with Rain, not. The Cauſe is, for that *Southern Winds* do of themſelves qualify the Air to be apt to cauſe Fevers; But when Showers are join'd, they do refrigerate in part, and check the ſultry Heat of the *Southern Wind*. Therefore this holds not in the Sea-Coaſts, becauſe the Vapours of the Sea without Showers, do refreſh.

The Cauſe aſſign'd to Malignant Epidemical

Diſeaſes, particularly the *Plague*, by the Ingenious and Learned Dr. *Mead*, is an Hot and Moiſt Temperament of the Air, which is obſerv'd by *Hippocrates*, *Galen*, and the General Hiſtories of Epidemical Diſeaſes, to attend thoſe Diſtempers. Vid. *Mead* of *Poiſons*, Eſſay 5. p. 161. But indeed (ſays the Reverend and Ingenious Mr. *Derham*, in his *Phyſico-Theology*) whether the Cauſe be this, or Poiſonous, malignant Exhalations, as others think, the *Winds* are however very Salutiferous in ſuch Caſes, in cooling the Air, and diſperſing and driving-away the Moiſt or Peſtiferous Vapours. It is well obſerv'd (in my Lord *Howard*'s Voyage to *Conſtantinople*) That at *Vienna* they have frequent *Winds*, which if they ceaſe long in Summer, the *Plague* often enſues: So that it is now grown into a Proverb, *That if* Auſtria *be not Windy*, *it is ſubject to Contagion. Bohun* of *Wind*, p. 213.

From ſome ſuch Commotions of the Air (ſays Mr. *Derham*) I imagine it is, that at *Grand-Cairo* the *Plague* immediately ceaſes as ſoon as the *Nile* begins to over-flow; altho' Mr. *Boyle* attributes it to Nitrous Corpuſcles. *Determ. Nat. Effluv.* Cap. 4.

Nulla enim propemodum Regio eſt, *quæ non habeat aliquem* Flatum *ex ſe naſcentem*, *& circa ſe cadentem.*

Signs of Continuance of Weather.

SOME that have been very curious Obſervers of the Weather, have laid down this as a pretty good Rule to be enſur'd of the Weather for four or five Days together (if a Man was to go a Journey or ſo) and not fail one time in ten, When the Wind has been in the North, or North-Eaſt, two Days without Rain, and continue in the ſame Point the third Day, then one may venture to go a Journey, if the Air be clear. Becauſe one may wait a Month or Two for a Week of Fair Weather together, and not have it. Therefore this Rule is of uſe every Week for a ſingle Day or Two,

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Prognoſtications of the Weather by the Weather-Glaſſes.

THE principal Obſervations made upon the *Barometer*, by the learned Dr. *Halley* (*Philoſ. Tranſ.* N°. 181.) from the different Heights of the *Mercury* at ſeveral times, are theſe,

The *Firſt* is, That in Calm Weather, when the Air is inclin'd to Rain, the *Mercury* is commonly Low.

2. That in ſerene good ſetled Weather, the *Mercury* is generally High.

3. That upon very great Winds, tho' they be not accompanied with Rain, the *Mercury* ſinks loweſt of all, with relation to the Point of the Compaſs the Wind blows upon.

4. That, *cæteris paribus*, the greateſt Heights of the *Mercury* are found upon *Eaſterly*, and *North-Eaſterly* Winds.

5. That in calm Froſty Weather the *Mercury* generally ſtands High.

6. That after very great Storms of Wind, when the *Quick-ſilver* has been Low, it generally riſes again very faſt.

7. That the more *Northerly* Places have greater Alterations of the *Baroſcope* than the more *Southerly*.

8. That within the Tropicks, and near them, thoſe Accounts we have had from others, and my

own Obſervations at St. *Helena*, make very little or no Variation of the Height of the *Mercury* at all Weathers.

Hence I conceive that the Principal Cauſe of the Riſe and Fall of the *Mercury*, is from the variable Winds which are found in the *Temperate Zones*, and whoſe great Unconſtancy here in *England* is moſt notorious.

A Second Cauſe is the uncertain Exhalation and Precipitation of the Vapours lodging in the Air, whereby it comes to be at one time much more crowded than at another, and conſequently Heavier; but this latter in a great Meaſure depends upon the former. Now from theſe Principles I ſhall endeavour to explicate the ſeveral Phænomena of the *Barometer*, taking them in the ſame order I laid them down: Thus

1. The *Mercury*'s being Low enclines it to Rain, becauſe the Air being Light, the Vapours are no longer ſupported thereby, being become Specifically Heavier than the Medium wherein they floated; ſo that they deſcend towards the Earth, and in their fall, meeting with other Aqueous Particles, they incorporate together, and form little Drops of Rain; but the *Mercury*'s being at one time lower than at another, is the Effect of two Contrary Winds blowing from the Place where the *Barometer* ſtands; whereby the Air of that Place is carried both Ways from it, and conſequently the incumbent Cylinder of Air is diminiſh'd, and accordingly the *Mercury* ſinks; as for inſtance, If in the *German* Ocean it ſhou'd blow a Gale of *Weſterly* Wind, and at the ſame time an *Eaſterly* Wind in the *Iriſh* Sea; or if in *France* it ſhou'd blow a *Northerly* Wind, and in *Scotland* a *Southerly*; it muſt be granted me that that Part of the Atmoſphere impendent over *England*, wou'd thereby be exhauſted and attenuated,

ated, and the *Mercury* wou'd ſubſide, and the Vapours which before floated in thoſe Parts of the Air of equal Gravity with themſelves, wou'd ſink to the Earth.

2. The greater Height of the *Barometer* is occaſion'd by two contrary Winds blowing towards the Place of Obſervation, whereby the Air of other Places is brought thither and accumulated; ſo that the incumbent Cylinder of Air being increas'd both in Height and Weight, the *Mercury* preſs'd thereby muſt needs Riſe and ſtand High, as long as the Winds continue ſo to blow, and then the Air being ſpecifically Heavier, the Vapours are better kept ſuſpended, ſo that they have no Inclination to precipitate and fall down in Drops, which is the Reaſon of the ſerene Good Weather, which attends the greater Heights of the *Mercury*.

3. The *Mercury* ſinks the loweſt of all by the very rapid Motion of the Air in Storms of Winds. For the Tract or Region of the Earth's Surface, wherein theſe Winds rage, not extending all round the Globe, that Stagnant Air which is left behind, as likewiſe that on the Sides, cannot come in ſo faſt as to ſupply the Evacuation made by ſo ſwift a Current, ſo that the Air muſt neceſſarily be attenuated, when and where the ſaid Winds continue to blow, and that more or leſs according to their Violence; add to which, that the Horizontal Motion of the Air, being ſo quick as it is, may in all Probability, take off ſome part of the perpendicular Preſſure thereof: And the great Agitation of its Particles, is the Reaſon why the Vapours are diſſipated, and do not condenſe into Drops ſo as to form Rain, otherwiſe the natural Conſequence of the Air's Rarefaction.

4. The *Mercury* ſtands the Higheſt upon an *Eaſterly* or *North-Eaſterly* Wind, becauſe in the

Great *Atlantick* Ocean, on this Side the 35th Deg. of *North* Latitude, the *Weſterly* and *South-Weſterly* Winds blow almoſt always Trade, ſo that whenever Here the Wind comes up at *Eaſt* and *North-Eaſt*, 'tis ſure to be check'd by a contrary Gale, as ſoon as it reaches the *Ocean ;* wherefore, according to what is made out in our Second Remark, the Air muſt needs be heap'd over this *Iſland*, and conſequently the *Mercury* muſt ſtand High, as often as theſe Winds blow. This holds true in *This Country*, but is not a general Rule for others, where the Winds are under different Circumſtances: And I have ſometimes ſeen the *Mercury Here* as Low as 29 Inches upon an *Eaſterly* Wind, but then it blew exceeding hard, and ſo comes to be accounted for, by what was obſerv'd upon the Third Remark.

5. In Calm Froſty Weather the *Mercury* generally ſtands High, becauſe (as I conceive) it ſeldom freezes, but when the Winds come out of the *Northern* and *North-Eaſtern* Quarters, or at leaſt unleſs thoſe Winds blow at no great Diſtance off: For the *Northern* Parts of *Germany*, *Denmark*, *Sweden*, *Norway*, and all that Tract from whence *North-Eaſtern* Winds come, are ſubject to almoſt continual Froſt all the Winter; and thereby the lower Air is very much Condenſed, and in that State is brought *Hitherwards* by thoſe Winds, and being accumulated by the oppoſition of the *Weſterly* Wind blowing in the *Ocean*, the *Mercury* muſt needs be preſs'd to a more than ordinary Height; and as a concurring Cauſe, the ſhrinking of the lower parts of the Air into leſſer room by Cold, muſt needs cauſe a deſcent of the Upper parts of the Atmoſphere to reduce the Cavity made by this Contraction to an Æquilibrium.

6. After great Storms of Wind, when the *Mercury*

cury has been very Low, it generally Riſes again very faſt; I once obſerv'd it to riſe an Inch and a Half in leſs than Six Hours after a long continu'd Storm of *South-Weſt* Wind. The Reaſon is, becauſe the Air being very much rarified, by the great Evacuations which ſuch continu'd Storms make thereof, the neighbouring Air runs in the more ſwiftly to bring it to an Æquilibrium, as we ſee Water runs the faſter for having a great Declivity.

7. The Variations are greater in the more *Northerly* Places, as at *Stockholm* greater than at *Paris* (compar'd by M. *Paſcall*) becauſe the more *Northerly* Parts have uſually greater Storms of Wind than the more *Southerly*, whereby the *Mercury* ſhou'd ſink Lower in that Extream; and then the *Northerly* Winds bringing the condens'd and ponderous Air from the Neighbourhood of the *Pole*, and that again being check'd by a *Southerly* Wind, at no great diſtance, and ſo heap'd, muſt of Neceſſity make the *Mercury*, in ſuch caſe, ſtand Higher in the other Extream.

8. Laſtly, This Remark, That there is little or no Variation near the *Æquinoctial*, does above all others, confirm the Hypotheſis of the Variable Winds being the Cauſe of theſe Variations of the Height of the *Mercury*, for in Places above-nam'd there is always an eaſy Gale of Wind, blowing nearly upon the ſame Point, *viz.* E. N. E. at *Barbadoes*, and E. S. E. at St. *Helena*, ſo that there being no contrary Currents of the Air to exhauſt or accumulate it, the Atmoſphere continues much in the ſame State: However upon Hurricanes (the moſt violent of Storms) the *Mercury* has been obſerv'd very Low, but this but once in Two or Three Years, and it ſoon recovers its ſettled State of about 29 Inches and a Half.

Dr. *Wallis*'s Obſervations on the *Barometer* are theſe —— In thick foggy Weather I find my Quick-ſilver to riſe; which I aſcribe to the Heavineſs of the Vapours in the Air.

In Sun-ſhiny Weather it riſes alſo (and commonly the clearer, the more) which I think may be imputed partly to the Vapours rais'd by the Sun, and making the Air heavier; and partly to the Heat, increaſing the Elaſtic or Springy Power of the Air: which latter I rather add, becauſe I have ſometimes obſerv'd in Sun-ſhiny Weather when there have come Clouds for ſome conſiderable time (ſuppoſe an Hour or Two) the *Quick-ſilver* has fallen; and then upon the Sun's breaking out again, it has riſen as before.

In Rainy Weather, it uſes to fall (of which the Reaſon is obvious, becauſe the Air is lighten'd, by ſo much as falls:) In Snowy Weather likewiſe, but not ſo much as in Rain. And ſometimes I have obſerv'd it, upon a Hoar-Froſt falling in the Night.

In Windy Weather, I find it generally to fall; and that more univerſally, and more diſcernably, than upon Rain (which I attribute to the Wind's moving the Air collaterally, and thereby not ſuffering it to preſs ſo much directly downwards; the like of which we ſee in Swimming *&c.*) and I have never found it Lower than in High Winds.

I have divers Times, upon diſcerning my *Quick-ſilver* to fall without any viſible Cauſe at Home, look'd abroad, and found (by the Appearance of broken Clouds, or otherwiſe) that it had rain'd not far off, tho' not with us: whereupon the Air being then light'ned, our heavier Air (where it rain'd not) may have in part diſcharg'd it ſelf on that lighter.

Dr. *Liſter*'s Obſervations on the *Barometer* are theſe —— In *England* in a violent Storm, or when the *Quick-ſilver* is at the very Loweſt, it then viſibly breaks and emits ſmall Particles (as I have more than once obſerv'd) which Diſorder I look upon as a kind of fretting; and conſequently at all times of its Deſcent, it is more or leſs upon the Fret. In this Diſorder of the *Quick-ſilver*, I imagine it has its Parts contracted; becauſe then the *Quick-ſilver* emits freſh Particles of Air into the Tube, which increaſing the Bulk of the Air, and conſequently its Elaſticity, the *Quick-ſilver* is neceſſarily depreſs'd thereby. And that much Air is mix'd with it, appears from the Application of a heated Iron to the Tube, as is practis'd in the purging of it that Way.

Now when the *Quick ſilver* riſes in the Tube (which it certainly does both in Hot and Froſty Weather) it may then be ſaid to be in a Natural State, free, open, and expanded like it ſelf, which it ſeems it ever is within the *Tropicks*, and with Us only in very Hot, and very Froſty Weather. But when it deſcends, it is then contracted, and as it were convuls'd and drawn-together, as it moſtly is in our *Climate* of *England*, and more or leſs (as we gueſs) in all Places on this Side the *Tropicks*. Which Contraction plainly appears from the Concave Figure of both Superficies, not only in that of the *Quick-ſilver* in the Tube, but alſo (if well obſerv'd) in that which ſtagnates in the Pot or Diſh it ſelf.

The Difficulty ſeems to ly in the reconciling the ſame Effect of the *Quick-ſilver's* Riſing in the Tube, from ſuch ſeemingly-different Cauſes, as great Heat and intenſe Froſt: And thoſe who ſhall willingly aſſent to us in one Particular, and grant us Warmth as a probable Cauſe of its Reſtitution to its Nature, will yet be at a ſtand how to imagine, that Great Froſt likewiſe ſhou'd bring the *Quick-ſilver* nearer to its Own Nature too. I anſwer that *Salts* liquify'd, will coagulate or cryſtalize, *i. e.* will return to their own proper Natures, both in Cold and in Heat: and therefore tho' moſt Men practiſe the ſetting them in a Cool Cellar for that purpoſe, yet ſome (as *Zwelfer*) adviſe, as the beſt means to have them ſpeedily and fairly Cryſtalliz'd, to keep them conſtantly in *Balneo*. Thus alſo the *Lympha* of the *Blood* does become a Jelly, if you ſet it in a Cool Place, and the ſame is by Warmth in like manner inſpiſſated.

It will not be amiſs to add by way of Corollary a Note concerning Healthful and Sickly Seaſons, more particularly as it may refer to this *Phænomenon* of Great Cold and Froſt. If therefore *Quick-ſilver* and Liquids are neareſt their own Natures, and have leſs Violence done to them, in very Cold and very Hot Seaſons; the *Humours* of our Bodies, as Liquids, in all Probability muſt be in ſome Meaſure accordingly affected. And that therefore Cold is healthful, I argue from the vaſt Number of Old Men and Women to be found upon the Mountains of *England*, comparatively to what are found elſewhere.

Again, the *Blood* itſelf (or the vital Liquor of Animals equivalent to it) is in moſt Kinds of Animals in Nature, or its Natural State, ſenſibly Cold; for that the Species of Quadrupeds and Fowls, are not to be compar'd, for Number, to Fiſhes and Inſects; there being in all Probability (by what I have obſerv'd) above 100 Species of theſe latter Creatures, whoſe vital Juice is Cold, to one of the former: But becauſe we moſt converſe with thoſe whoſe vital Juice is Hot, we are apt to think the ſame of all.

Mr. *Boyle* has left us theſe general Obſervations and Directions concerning the *Barometer*.

1. It will be requiſite to note the Day and Hour in which Obſervations are made.

2. The Situation of the Place where the *Barometer* ſtands as to Height, ſince by the Length of the Atmoſpherical Pillar of Air, that preſſes upon it, the Height of the *Mercury* may vary; tho' not always exactly; For ſometimes upon Changes in the Air not otherwiſe obſervable, the *Mercury* will ſubſide more than uſually in that which ſtands fartheſt from the Center of the Earth, when at the ſame time it does not proportionably ſubſide in that which is plac'd in a lower Station. And

It, perhaps, may be worth noting, whether upon exceſſive Droughts, when the Ground is parch'd and crack'd, ſome ſubterraneal Effluvia may not riſe, which may add a ſpecifick Gravity to the Air.

Nor will it be needleſs, when other Obſervations are making, at the ſame time to obſerve the Weather; as alſo what Winds blow, and whether violent or more remiſs? For ſometimes it is obſerv'd, that when High Winds blow, the *Mercury* is the the Lower, tho' not always.

But to favour what has been intimated, *viz.* That the Alterations in the Weight of the Air depend on ſubterraneal Steams mix'd with it; It has been obſerv'd that after long Droughts, upon a Shower of Rain, ſo many Steams have been either prevented from riſing, or depreſs'd and precipitated, that the *Mercury* has ſubſided within Two Sixteen Parts of an Inch.

As the *Thermometer* meaſures the Degrees of Cold and Heat, and the *Barometer*, thoſe of the Weight of the Air, ſo we may make uſe of a Machine call'd *Hygrometer*, or *Hygroſcope* to meaſure the Dryneſs or Humidity of the Air; for certain it is, that the Air is more or leſs Moiſt, as 'tis more or leſs ſtock'd with Vapours.

One ſort of *Hygrometer* may be made of a String of Cat-gut, Four Foot Nine Inches long, made faſt at its two Extremities, againſt any Wall or Wainſcot, loaded in the Middle with a Lead Weight of Half a Pound, tied to the String, which will lower it more or leſs according to the Degrees of the Dryneſs or Moiſture of the Air mark'd upon a perpendicular Plain divided into equal Parts, like the Table belonging to a *Barometer:* For when the String has been ſteep'd in Brine, the Moiſtneſs of the Air will contract it, and ſo raiſe the Weight, and on the contrary, the Dryneſs of the Air will dilate it, and conſequently the Weight will ſink. You may alſo contrive an Index to be plac'd againſt the Degrees of Variation, to ſlide Higher or Lower, and by it diſcover how much the Weather varies every day, or is at a Stand. Inſtead of a Cat-ſtring you may have a Piece of Packthread or Whipcord, which indeed ſeems to be more ſuſceptible of Moiſture; for Moiſture eaſily inſinuates into all Porous Bodies, and above all, into Strings which ſhorten ſenſibly upon the Acceſſion of the leaſt Moiſture. Thus when *Sixtus* V. ſet up the Obelisk of the *Vatican* in *Rome*, the Cables being made longer by that huge Weight, which (M. *Ozanam* tells us) weigh'd One Million Six Thouſand Forty Eight Pounds, he order'd the Cables to be ſoak'd in Water, upon which they ſhrunk ſo, that they ſet that huge Maſs upon its Baſis, as it now ſtands.

Another Way of making a good *Hygroſcope* is, by putting a certain quantity of Salt-petre well calcin'd, into one Scale of a juſt Ballance, and an equal Weight of Lead-drops into the other, ſo as to make the Scales hang exactly in Æquilibrio; then add to the Centre of the Motion of the Ballance, a ſmall Circle divided into equal Parts, repreſenting the Degrees of the Dryneſs or Moiſture of the

Air, which the Tongue of the Ballance will point to, as the Air grows Moiſter or Dryer, for the moiſter the Air grows, the more will the Lead riſe.

But the Invention of *Hygroſcopes* is endleſs: I ſhall therefore only add this Obſervation: Mr. *Foucher* ſays he has experienc'd, by means of an *Hygrometer*, That in Summer the Weather is moiſteſt between Eight and Nine in the Morning; And that the Air is moiſter (or fuller of Vapours) at Full Moon, than when the Moon is near the Change.

APPENDIX.

An Account of an *AURORA BOREALIS*, or Strange Appearance in the Air, *March* 6th 1715--16. Together with the Cauſes and Prognoſtications of it.

MARCH 6th 1715-16. in the Evening, was obſerv'd in the Firmament, in moſt Parts of *Europe*, a very ſurprizing *Phænomenon*, call'd by the Naturaliſts, *AURORA BOREALIS*, which tho' not ſo rare in more *Northern* Climes, is very ſeldom ſeen in our *Southern* Parts, and is generally of leſs Duration where more frequent. In the *North-Weſt* was obſerv'd a ſmall Cloud (if it might be ſo call'd) or rather a Gathering in the Sky, having ſomething Particular in its Colour. After ſome little time it began to labour and curl, and make many extraordinary Motions and involving Turns within it ſelf. In 5 or 6 Minutes after it had work'd in this manner within it ſelf, folding (as it were) and unfolding, it ſeparated it ſelf into long and broad Streams of Light, *Coruſcation*, or *Fulgor*, iſſuing out of the aforeſaid darkiſh Cloud or Fund of Vapours (about 25 or 30 Degrees above the *Horizon*, *North-Eaſt* as near as could be gueſs'd) reſembling the Beams of the *Sun*

Setting in a drizling Evening, the Streams pointing directly towards the *Zenith.* It was the more aſtoniſhing, conſidering the *Sun* had been more than an Hour ſet, and the *Moon's* riſing not being till Morning. Preſently after, ſome other Streams or Pyramids of Light iſſued out of the ſame Cloud, near to the former, with a very unuſual Light, and with variety of Colours, Black, Blue, Flame-colour, Yellow, *&c.* and ſo more and more, till all that Part of the Heavens was over-ſpread. Theſe *Bright Beams* ſeem'd to make their way, one after another, regularly enough into the *Weſt.* When they were all poſted in the *Weſt*, of a ſudden, after one another, they ſhot almoſt directly *Eaſtwards* (and avoided the *South* entirely) and this they did with the utmoſt Precipitation and Celerity. In the *Eaſt* they appear'd Higher-colour'd than they did in the *Weſt ;* but retain'd ſtill for a little time the reſemblance rather of *Columns of Light* than of Fire-Beams. At laſt they began to wheel about, and intermingle their Points, and made ſuch violent and quick Vibrations among one another, that it was not poſſible to find out the Order of their Motions. This Hurly-burly of Confuſion was about 7 a Clock in the Evening, and laſted about an Hour and Half; from the Violence whereof on a ſudden burſt out a very great *party-colour'd Flame*, which ſeem'd to be double and folding in upon it ſelf with great Vehemence and Fury. Thro' all that diſturb'd Region of the Air, the *Stars* appear'd clear, as thro' a thin bright Smoak, or as the *Sun* ſometimes thro' a thin bright Cloud. The other Part of the Heaven toward the *North-Eaſt* and *South-Eaſt*, was very clear, the Stars bright and twinkling as in a Winter's Cold Night when there is no *Moon.* About 9 a-Clock at Night theſe *Meteors* in a great meaſure diſappear'd, but not quite :

Some faint ſort of Contentions were ſtill perceiv'd from the *Eaſt* to the *North:* and about 10 a-Clock they broke out again with a freſh Violence, and darted to the *Weſt* in the ſame manner as before, and thence to the *Eaſt,* and ſo continu'd till about Half an Hour paſt 11, and then they retir'd from the *Eaſt* to the *North* again: About 12 a bright *Globular Body* appear'd, as big as, and like the *Sun* at his Riſing, but not quite ſo clear. During this time, the Light was ſuch that one might plainly ſee to Read. The Night was Calm, not ſo much as a Breath of Wind was perceiv'd. About 3 the next Morning, the *Coruſcations* by degrees ceaſed, and the Great Light in the *North-Eaſt* exactly reſembled the *Dawn of Day,* and therefore call'd *AURORA BOREALIS.*

For then ſmall Sparks appear'd, and *ſcatter'd Light*
Broke ſwiftly forth, and wak'd the ſleepy Night:
The Night amaz'd began to haſt away,
As if thoſe Fires were *Beams of coming Day.*

Creech's Lucret.

Now the natural Cauſe of this *Phænomenon* I take to be a vaſt Quantity of *Nitrous* Particles exhal'd from the *melted Snow* (an unuſual Quantity of which we had in the Winter time) together with an Exhalation of a great Quantity of *Sulphureous* Particles, which been long lock'd up in the Pores of the Earth, and upon the Melting of the *Snow* rais'd up into the Middle Region of the Air, from whence they came, (otherwiſe this *Phænomenon* cou'd not have been ſo Univerſally ſeen, as it was, in all Parts). Theſe *Nitrous* and *Sulphureous* Particles being exhal'd in thin Vapours by the Heat of the Sun, and other Stars into the Middle Region, were by Degrees condens'd by circumambient Clouds together with the Coldneſs of that Region, till at laſt they became a ſtrong compacted Body, --*Vis unita*

unita fortior. This reſtleſs and rebellious Spirit of *Nitre & Sulphur* in Conjunction, growing ſtronger and ſtronger, and altogether impatient of Reſtraint, was for a long time ſtruggling for Liberty; till at length, partly by the kind Influence of the rarifying *Sun*, removing the Frontiers, and ſo making-way for the preſſing ambient Clouds to fall-back; and partly by its own proper Force and Motion, fir'd with Zeal and Reſolution, it burſt thro' all Obſtacles (the finer Part of it taking Fire firſt) diſplaying it ſelf in flying Colours, in Thundring *Streams of Light*, and here and there aſtoniſhing *Coruſcations*; to no ſmall Amazement of the Lower World, many of whoſe ignorant Inhabitants ſtood beholding the Wondrous, becauſe Un-uſual Sight.

Theſe *Bruta Fulmina*, this harmleſs Thunder and Lightning in the middle Region of the Air, bears ſome Reſemblance with the common Thunder and Lightning in our groſs Atmoſphere: And no doubt but this unuſual Lightning was attended with ſome *Noiſe*, tho' little, and not heard at this Diſtance, becauſe out of the Verge of our Sphere, and beyond the Convexity of our Atmoſphere. And no doubt but the Matter of both theſe Sorts of *Thunder* and *Lightning*, both in the Lower and Middle Region of the Air (as the old *Philoſophers* call 'em) were the ſame, and even the Manner of their Generation the ſame, only thoſe in the upper Region were certainly generated of greater Quantity of Exhalations, and charg'd with greater Quantity of *Nitre* and *Sulphur*, and conſequently were rais'd the Higher. They differ only as to the Manner of *Lightning* and Illumination. Thoſe *Lightnings* that happen in the lower Region, are ſtruck and darted upon the Earth all at once, I mean every ſingle Flaſh at one Stroke, and ſo all its Matter is ſcatter'd and diſpers'd, and hinder'd from rallying again;

again: But the *Lightnings* in the Upper Region being not darted againſt any hard Body, are ſeveral times recollected. Theſe have a larger, finer, and more unconfin'd Space of Air for Expanſion and Exploſion. Theſe are ſhot, with the utmoſt Celerity, a great many Miles at one Flaſh, (according to the Strength and Quantity of the *Aerial Gunpowder* they are charg'd with) and then the remaining Matter is detain'd, embarraſs'd and involv'd within ſome diſtant and condenſing Cloud for ſome time, as the whole Matter was at firſt, till at length they rally and burſt out again in the ſame Manner as before, and perform another Stage, and after that another, and perhaps another, till their Force being almoſt ſpent in ſuch long Journeys, their Vibrations grow fainter and fainter, and conſequently ſhorter and ſhorter, they at laſt terminate in a general Illumination of rarify'd Air, like the Dawn of Day, and ſo call'd *AURORA BOREALIS*, as I ſaid before.

The Reaſon of all the *Flaſhes* of *Lightning* darting in the ſame Tract, is the rarify'd Air caus'd by the firſt Flaſh. For a ſmall Quantity of Forerunning Particles breaking Priſon firſt, and ſetting out beforehand, prepar'd the Way for the reſt by clearing the Air, and ſo caus'd thoſe faint Coruſcations which preceded thoſe more terrible and aſtoniſhing Flaſhes of Lightning.

If it ſhou'd be objected againſt this Opinion of mine, that *Nitre* is a Cold Body, and therefore cou'd not be any Conſtituent Part of this Hot and *Fiery Meteor* I ſpeak of. Suppoſe the Suppoſition juſt, yet *Nitre* and *Sulphur* mixt together, muſt be allow'd to be Inflammable; and if the Objector had but courage enough to place himſelf at the Mouth of a fir'd Cannon charg'd with ſuch Ingredients, he might quickly be convinc'd by Experiment. But not to put him to ſo much Danger, 'twill be ſafer for him to apply himſelf to that Learned Naturaliſt Mr. *Boyle* for Conviction, who in his *Experimental Hiſtory of Cold*, Tit. 17. Sect. 8 confutes *Gaſſendus*, who aſcribes the Frigorifick Virtue of Bodies to the admixture of Nitre. Tho' I allow *Nitre* (ſays he) to be a Subſtance diſpers'd thro' moſt Bodies, yet, ſince Cold is only a Privative Quality, and an Abſence of Heat, there are other Agents, which by ſtopping the Motion of the inſenſible Parts of a Body, may deprive it of its Property of Heating. And tho' *Gaſſendus* aſſerts, that Bodies receive the Impreſſions of Cold, from *Nitrous* Exhalations ſwimming in the Air; yet amongſt all the Experiments I have made to reſolve *Nitre* into Vapours, I have not found, that it was able to effect more in the Production of Cold, than any other Saline Bodies. And Spirit of *Nitre* is ſo far from having an actual Coldneſs greater than other Bodies, that it is potentially Hot. And whether the Exhalations of *Nitre*, will congeal Water or not; *Spirit of Nitre*, I have obſerv'd, will diſſolve Ice, as ſoon almoſt as *Spirit of Wine:* And tho' *Nitre*, mixt with Snow or Ice may promote Congelation; yet it proves not that the Parts of *Nitre* are frigorifick; ſince the Experiment will ſucceed with Spirit of Wine—— Thus far this excellent *Naturaliſt*.

Let us now compare what has been ſaid upon our *Phænomenon*, which appear'd lately, with a like *Phænomenon* that appear'd about 100 Years ago, and is deſcrib'd by the afore-mention'd Learned *Gaſſendus*, in his Chapter *De Aurora Boreali, & Ignibus noctu per Aerem diſcurrere viſis.* Tom. 2d. Phyſicæ, pag. 107. *&c.*

Circa Fulgorem *mirabilem, qui aliquando Nocte intempeſtivâ & ſilente Lunâ, totum Septentrionalem Tractum ita occupat, ut claram* Auroram *mentiatur,*

unde

undè & Aurora Borealis *ab aliquibus dicitur. 'Quæ- 'dam Phænominorum (inquit* Seneca) *tantum Lucis 'emittunt, ut fugent Tenebras, &* Diem *repreſen- 'tent, donec conſumpto Alimento, primùm obſcuriora 'ſint, deindè Flammæ modo, quæ in ſe cadit, per 'aſſiduam diminutionem redigantur in nihilum. Tale 'Phænomenon apparuit Anno* 1621. Sept. 12.

Sunt 4 *modi horum* Phænomenorum *generandorum, qui ab* Epicuro *recenſentur. Unus non prorſus improbabilis eſſe videtur, ut habens quidpiam ſimile cum Fulminum generatione. Scilicet ejuſdem generis Materies ſic accendere Surſum debet, ut non grandi quidem & Condenſâ Nube, ſed tenui tamen nec ſerenitatem Conturbante Nebulâ (nempè tales aliquæ ſunt ex quibus ſæpè vidimus concreſcere ſpontè in ſereno Nubes) ut, inquam, tenui Nebulâ quaſi amictu quodam contineri debeat, quouſque Sublimè evecta, intra eam volvatur, incaleſcat, ex quâ parte tenuior, amiculuſque fragilior fuerit, accendatur, erumpat, ac interim Ignis reliquam materiam, ob ſui lentorem, ſeu tenacitatem non ſtatim depaſtam, in reſiduam partem amiculi urgeat, avolantemque, ut continens ſui pabulum inſectaretur, quouſque eâ planè conſumptâ, ipſe extabeſcat, & viſibilis fieri deſinat*——

Pag. 108. Albor *ille, ſive* Auroræ--*ſpeciem--æmulata Claritas, apparuit mihi ad Boream; ſic ad Boream quoque apparuerit quibuſcunque conſpicua fuit, nemini verò prorſùs ad Auſtrum. Stuporem adauget, vel ex eo quòd cum Materies Phænomeni fuiſſe pertenuis Vapor videretur, oportuerit talem Vaporem eſſe aut immenſæ Diffuſionis ſecundùm Terræ Superficiem, aut immenſæ Altitudinis, ut nihil Superficiei Terræ Devexitas obſtiterit, quò minùs è Locis adeo diſſitis eodem in ſitu conſpiceretur: ac tantò magis, ſi ulteriùs & in extremum uſque Septentrionalem fuit Phænomenon propagatum.*

It may not perhaps be altogether improper in this place, to add to this (by way of farther Explanation of theſe Matters) the Accounts that are given of *Igneous Meteors* by the Learned Mr. *Morton*, Dr. *Woodward*, Dr. *Wallis*, and Dr. *Plot*.

Igneous Meteors (ſays Mr. *Morton* in his *Nat. Hiſt.* of *Northamp.* p. 343.) are form'd of Mineral Exhalations, as Thunder and Lightning. The Cauſe whereof is eſpecially Nitre and Sulphur, raiſed out of the Earth by a conſiderable Degree of Heat, and thence born up by the like Degree of Heat into the Atmoſphere, where they conſtitute a kind of *Aerial Gun-powder*. And what Dr. *Woodward* (in his *Nat. Hiſt. of the Earth*, p. 205, 206.) ſpeaks with ſo much clearneſs concerning the Fulminating Damps, is fitly applicable to this ſort of Meteor; the Matter of both being the ſame; and that differing from this in this reſpect only, or chiefly, that the Matter of the *Fulminating Damp* is ſuſtain'd in the Air of the Mine or Coal-pit by a leſſer Degree of Heat, this of *Lightning* is taken up into the Atmoſphere by a greater Degree of Heat. And give me leave to add,—— The Matter of the *Aurora Borealis* exhal'd into the Middle Region by a ſtill Greater Degree of Heat.

This *Mineral Matter* which ariſes in Separate Parcels from the Earth, and in a conſiderable Quantity aſſembling more Cloſely in the Atmoſphere, becomes, upon being enkindled by the Heat that then accompanies it, a quick, active, and forcible Fire, which ſtriking thro' the Ambient Air, or thro' the Cloud that encompaſs'd it, with great Celerity, is what we call *Lightning*, as the Cloud and great Noiſe that uſually attends it, has the Name of *Thunder*. Whereof the Cauſe is the Diſcharge or Exploſion of this Fire from a Cloud; which as it is more or leſs Compact, and the Fire breaking forth of it is more or leſs forcible, the Noiſe is accordingly greater or leſs. When a great Quantity of this inflammable Matter is aſſembled, and takes fire at once, it occaſions a Noiſe like that of ſeveral Great Guns diſcharg'd at one and the ſame Time.— When it lies in a thinner and more diſperſed Collection, or in ſeparate Parcels, and is by little and little, or ſucceſſively attended, it occaſions a *Noiſe* reſembling that of Peals or Vollies which are made by a *Running Fire* (as they term it) of ſeveral ſmaller Guns diſcharg'd in a Train one after another. When the Cloud is of ſuch large Extent, and withall ſo Compact that the Fire, tho' ſtrong, is unable to break thro' it, it occaſions a deep and rolling Noiſe, not attended with Lightning, the Fire being ſpent by Degrees in the Boſom of the Cloud.

There are other more harmleſs Meteors of the fiery Kind (ſays Mr. *Morton*, p. 348.) which are not to be paſs'd by without ſome Remarks. *Sept.* 20. 1676. about Seven o' Clock at Night, or ſoon after, was ſeen an unuſual *Meteor*, by ſome call'd *Draco volans*, in *Northamptonſhire*, and the Neighbouring Counties: whereof we have a ſhort Account from Dr. *Wallis* in the *Phil. Tranſ.* N°. 135. p. 863.——About 7 at Night (ſays he) appear'd a ſudden Light, equal to that of Noon-Day, ſo that the ſmalleſt Pin or Straw, might be ſeen lying on the Ground. And above in the Air, was ſeen (at no great Diſtance, as was ſuppos'd) a long Appearance as of Fire, like a long Arm (for ſo it was deſcrib'd to me) with a great Knob at the End of it; ſhooting along very ſwiftly: And at its diſappearing ſeem'd to break into ſmall Sparks, or Parcels of Fire, like as Rockets and ſuch Artificial Fire-works, in the Air are wont to do. 'Twas ſo Surprizing, and of ſo ſhort Continuance, that it was ſcarce above Half a Minute. This Fiery Meteor might be a *Draco volans*, or ſome ſmall *Comet*, becauſe it was ſeen in moſt Places in *England*. Dr. *Plot* (in his *Nat. Hiſt.* of *Stafford-ſhire*, p. 20.) calls this Meteor *Capra ſaltans*, which (as it were deſcrib'd to him) appear'd like a great Fire at a Diſtance, but coming nearer, its Form and Motion were plainer, it being of a Globular Figure, moving by Jerks, and making ſhort Reſts, at every one of 'em letting-fall Drops of Fire, which were part of its Body, for it decreas'd in Magnitude the farther it went, and the oftner it drop'd; ſo that it wholly diſappear'd at about Three Quarters of a Mile diſtance.

The afore-mention'd Mr. *Morton* (in his *Nat. Hiſt.* of *Northampton-ſhire*, p. 349.) proceeds to give us an Account of ſome more *Meteors*, one that was obſerv'd in *Sept.* 1693. The Top of which was in the Form of the Letter W: and had a Liſt or String of Light appendant to the lower Part of the W, about a Yard and a Half in length. It continu'd ſome time, and was ſeen by ſeveral round the Country.

In *Auguſt* 1699. was obſerv'd, a Globe of Fire, of ſurprizing Brightneſs and Magnitude, in the Weſtern Part of the Hemiſphere, a little after Sunſetting. It ſtruck downwards in an Oblique Line, and diſappear'd, when it came almoſt as low as the Horizon. In or near the Place of it, there ſucceeded a narrow Liſt or Stream as it were of a Fiery Smoak, about 35 Degrees in length, which continu'd compact and unbroken the Space of almoſt Two Hours. Towards the Cloſe of it, it became ſomewhat Winding or Curled. At length it was broken, or diſpers'd by Clouds that paſs'd that Way.

Somewhat more obſervable are thoſe ſeeming Burnings of the Air, or very bright Illuminations, which Two ſollowing Relations inform us of. At *Higham-Ferrers* in *Northampton-ſhire*, *Jan.* 28. 1699, about Half Hour paſt 5 in the Morning, appear'd on a ſudden a more than ordinary Light, like a Flaſh of Lightning, but of longer Continuance, much out-ſhining the Light of the Moon, which till then was clear. It continu'd over *Higham* about the Space of a Minute, and ſeem'd to move from *Eaſt* to *Weſt*. And about Five a Clock that very Morning was ſeen at *Plymouth*, a prodigious Light in the Firmament, of which perhaps this in *Northampton-ſhire* was a Part.

The other Relation is as follows, *Dec.* 18. 1707, about Eight o' Clock at Night, the Wind being Weſtward (a brisk Gale) and the Sky ſerene and clear, there appear'd at *Fenſhed* in *Northampton-ſhire*, a Brightneſs in the Air, which made an Arch from North-Weſt to North-Eaſt, equal to that which the Sun makes at the Winter-Solſtice, extending it ſelf from nigh the Bottom of our Hemiſphere, to nigh the Two Pointers of *Urſa major.* The Light was Pale and of a Silver Colour, ſo Light that all the Stars within the Compaſs of it, unleſs 1 or 2 of the firſt Magnitude, were not to be perceiv'd, being overcome by the greater Light; which, as far as it extended, was equal to that of the Day. There was a dark Cloud which lay, as it ſeem'd to us, along the Horizon, from one End of the Brightneſs almoſt to the other, and about Half a Degree Diameter. There was another long dark Cloud, of a Cylindrick Figure, which lay Horizontally, and ſeem'd to divide the Brightneſs into Two almoſt equal Parts. It had little or no Motion, tho' the Wind blow'd brisk. But on a ſudden there appear'd a ſwelling Brightneſs in that Cylindrick Cloud, which broke out into Flames of a Pale-colour'd Fire, that ſpread themſelves very far Southwards, and very nigh the Bottom of the Northern Part of our Hemiſphere. The Flames laſted not longer than Half a Minute, and then were carried Eaſt-ward, and ſoon vaniſh'd. The Cloud from whence they proceeded ſtill keeping its firſt Poſition, and not diminiſh'd. It was wonderfully frightful and amazing. The Brightneſs alſo was very ſtrange, and continu'd till 11.

Somewhat parallel hereto Mr. *Stow*, the Judicious Old Chronicler, relates from his own Obſervations. About Mid-night, *Nov.* 14. 1574. Fire and Smoak were ſeen to proceed from a Black Cloud in the North. The following Night the Heavens ſeem'd to be all on Fire; and over our Heads (ſays Mr. *Stow*) the Flames from the Horizon did meet, and there roll one in another as in a Furnace, in a marvellous raging manner.

There is no room (ſays Mr. *Morton*) to ſuſpect the Credibility of the two former Relations, that from *Higham,* and that from *Finſhed.* All I wou'd farther enquire, is, Whether theſe Extraordinary Splendors in the Air do not uſually happen at or nigh the Time of *Tempeſtuous Winds;* the Agent that produces them, perhaps, bearing forth from the Earth a conſiderable Quantity of ſubtiler and purer Igneous Matter, as the Heat which is diſcharg'd out of the Earth at the Time of Earthquakes, educes and bears up along with ſuch a Quantity of ſeveral Kinds of Mineral Matter, as to thicken, diſcolour, and darken the Atmoſphere. (*Vid.* Dr. *Woodward*'s *Nat. Hiſt.* of the *Earth,* p. 202.) That theſe unwonted Illuminations appertain to the Igneous Tribe of Meteors, appears by ſeveral Circumſtances, and particularly by that of the Eruption of Flames from out of the Black Clouds. And to me they ſeem conſtituted of a thin and diſperſed Collection of the Parts of Fire, of Quantity and Strength ſufficient to enlighten the Air, eſpecially if ſerene and clear; tho' not to heat it ſo, that the Senſes can diſcover any more than an Ordinary Warmth in it, tho' perhaps a Thermometer might.

Since my writing my Thoughts upon the late *Phænomenon,* I find a certain Author has publiſh'd a Pamphlet, entituled, *An Eſſay concerning the late Apparition in the Heavens, on the 6th of* March 1715--16. *Proving by Mathematical, Logical, and Moral Arguments, that it cou'd not have been produc'd meerly by the Ordinary Courſe of Nature, but muſt of neceſſity be a Prodigy.*

Now, tho' I wou'd by no means derogate from the Extraordinary Providence of *GOD*, when things cannot be ſolv'd by the Ordinary Courſe of Nature; yet I ſee no reaſon why we ſhou'd preſently run to Miracles in explaining Natural Events. For this (as a late Learned Author ſays) breaks the Chains of Natural Providence, when it is done without Neceſſity, that is, when things are otherwiſe Intelligible from Second Cauſes. This is robbing *Peter* to pay *Paul,* to take ſo much from GOD's Ordinary Providence, and place it to His Extraordinary. Indeed when a New Religion is brought into the World, 'tis very reaſonable it ſhou'd be uſher'd in with Miracles; but afterwards things return into their Channel, and do not change or overflow again, but upon Extraordinary Occaſions or Revolutions. The Extraordinary Power of GOD is to be accounted very Sacred, and not to be touch'd or expoſed for Our Pleaſure or Conveniency: But I am affraid we often make uſe of it only to conceal our Own Ignorance, or to ſave us us the trouble of enquiring into Natural Cauſes. We ought to conſider that the Courſe of Nature is truly the Will of GOD, and (as I may ſo ſay) his Firſt Will; from which we are not to recede, but upon clear Evidence and Neceſſity. And as in Matter of Religion, we are to follow the Known Reveal'd Will of GOD, and not to truſt to every Impulſe or Motion of Enthuſiaſm, as coming from the Divine Spirit, unleſs there be evident Marks that it is Supernatural, and cannot come from our Own; So neither are we, without Neceſſity, to quit the Known and Ordinary Will and Power of GOD eſtabliſh'd in the Courſe of Nature, and fly to Supernatural Cauſes, or his Extraordinary Will; for this is a Kind of Enthuſiaſm, as well as the other: And no-doubt that great Prodigality and Waſte of Miracles which ſome make, is no way to the Honour of GOD and Religion. 'Tis true, the other Extream is worſe than this, for to deny all Miracles, is in effect to deny all Reveal'd Religion; therefore due Meaſures are to be taken betwixt theſe Two, ſo as neither to make the Divine Power too mean and cheap, nor the Power of Nature Unlimited and All-ſufficient.

Nor is this Opinion of making a Prodigy of a meer Natural *Phænomenon*, culpable only upon a Religious, but alſo upon a Civil account. For if it be reckon'd a Prodigy, and ſome Wonderful thing, predicting ſome Ill Accident to the Nation in which we live, it may be of very Bad Conſequence. Tho' why it ſhou'd not be reckon'd a Good Omen, as well as a Bad one, or why it ſhou'd not be Ominous to any other Nation as well as Ours (ſuppoſing it obſerv'd in other Nations as well as This) I cannot imagine. I ſay, Suppoſing it reckon'd a Bad Omen to this Nation (moſt People being apt to fear the Worſt) How muſt we ſuppoſe People's Minds prepoſſeſs'd with ſuch an Opinion? How wou'd they be (as it were) Planet-ſtruck with a Panick Fear? How fatally Aſtoniſh'd and Diſhearten'd? Inſomuch that ſhou'd we ſuppoſe a Foreign Prince or Potentate to re-invade us, How fluſh'd (hereupon) with Hopes of Succeſs might the Invader be? And how diſmay'd, and already Half-overcome with Fear, the Invaded? And ſo this Suppos'd-Ominous Phænomenon be of as Bad, as *Merlin*'s Prophecy heretofore was of Good Conſequence to this Kingdom. For we are inform'd by Mr. *Camden*, that this Old Britiſh Prophet prophecy'd, That when a Stout *Prince*, with a freckled Face, ſhou'd paſs over the Ford call'd *Rydpencarn*, being in a River call'd *Nant-pen-carn*, the *Welch* ſhou'd be Subdu'd. Which accordingly came to paſs; for K. *Henry* II. who paſs'd over this Ford, was Freckle-fac'd; And as ſoon as the *Welch* heard where the King came over, their Hearts fail'd 'em, becauſe of this Prophecy; and ſo they Submitted thro' too much Credulity. It is not impoſſible, That K. *Henry* might chooſe to go over at this Ford, in Strength of this Prophecy, and his Enemies Credulity, the more to facilitate his Conqueſts. Vid. *Whiſton*'s Account of this *Meteor*. p. 74.

And as the making theſe *Phænomena*'s, and unuſual Appearances in the Air, to be (I know not what) Miracles and Prodigies, is very impolitick, becauſe oftentimes of dangerous Conſequence to the State; ſo likewiſe the imagining ſtrange Appearances of military Skirmiſhes in the Air, or Armies of Aerial Warriours diſputing in Battle-Array for Victory, is very Fooliſh as well as Fanciful, tho' ſo ſeriouſly mention'd by ſome of our old Hiſtorians, and too creduloully believ'd by the Vulgar. All thoſe fancied Figures of Armies fighting in the Air, and ſuch-like ſtrange Prodigy's, being nothing elſe in reality, but ſo many ſmall Clouds of odd, and ſometimes indeed ſtrange Shapes, together with Balls and Darts of Fire, or fiery Streaks and Waves, Lightnings and Coruſcations, terrible enough to the ignorant Spectators. This is the whole of the Matter, and all the reſt nothing elſe but Creatures of their own Brain, and the Product of their own ſuperſtitious Imaginations.

But not to inſiſt upon Generals; let us come to Particulars. The Author of the aforeſaid *Pamphlet* endeavours to prove that late *Phænomenon* in the Heavens to have been a Prodigy by Logical, Moral, and Mathematical Arguments. The bare mention of his Logical and Moral Arguments may be ſufficient.

His Logical Argument *Pag.* 16. runs thus,

All thoſe Things ought in reaſon to be accounted Prodigies, to which we can define nothing to be ſuperadded, in order to their being diſtinguiſh'd for Prodigies, and which we can only explain to be poſſibly Natural; without any other Foundation of a Proof, but meer Gueſs and Divination.

But no Man can define any thing to be ſuperadded to this, in order to its being diſtinguiſh'd into a Prodigy, or can explain it to be poſſibly Natural, by any other Foundation of a Proof, than meer Gueſs and Divination.

Therefore it ought in Reaſon to be counted a Prodigy.

His Moral Argument thus,

'Tis agreed on all Hands, by the Moraliſts, that the moſt probable Opinion is to be follow'd.

Now the moſt probable Opinion for Ignorant People to follow, is, that this muſt have been a Prodigy.

Conſequently the Opinion that ought to be entertain'd among the Generality of Mankind, is, that it was a Prodigy.

So much, and I think enough, concerning this Author's Logical and Moral Arguments. What I am chiefly concern'd to take Notice of, is, the *Minor* of his Mathematical Argument, tho' I ſee no Reaſon why it might not have been as properly call'd Phyſical Argument, which runs thus,

'That this *Fiery Apparition* did not act according 'to the Laws of Nature, is prov'd by Fact and Ex'perience of all that ſaw it, for after it had blaz'd, 'the Fire went entirely out, and then lighted again, 'which is contrary to the Laws of Nature and Rea'ſon; for when 'twas lighted, either there was 'more Aliment capable of maintaining ſo bright a 'Flame, or there was not; If there was, how cou'd 'the Fire naturally be extinguiſh'd as to appear ſo? 'If there was not, how cou'd it naturally light 'again into as bright a Flame as ever, ſo many 'Hours afterwards?

Now this *Minor* I beg leave to deny, by aſſerting that our *Phænomenon* or Fiery Apparition, did act according to the Laws of Nature; and that it did ſo, is prov'd by Fact and Experience of all that ſaw it; For after it had blaz'd, the Fire went not entirely out. Which I thus prove,

If the *Fire* after it had blaz'd went out, and was indeed totally extinguiſh'd, there muſt needs have been obſerv'd ſomething like an Extinction, ſomething of a *Caput mortuum* or Smoak, or as when ſuch like Meteors burſt into ſmall Sparks or Parcels of Fire, like Sky-Rockets, and ſuch-like Artificial Fire-works in the Air; or like the *Draco volans* (deſcrib'd by Mr. *Morton*, p. 348. of his *Nat. Hiſt.* of *Northampton-ſhire*) which mov'd by Jerks and made ſhort Reſts, letting-fall Drops of Fire, which were Part of its Body. This Suppoſition, any Man that is any-thing of a Meteorologiſt and in his right Senſes muſt ſurely grant.

But nothing of all theſe (which are the neceſſary Concomitants of ſuch extinguiſh'd Meteors) was ob-

obſerv'd in our Fiery *Apparition* (or *Apparitions* :) But after it had went its Length, *i. e.* after its Elaſticity was ſpent, and a great deal of its Spirit and Vigour unavoidably diminiſh'd (as plainly appear'd by its next ſhorter Stage or Flight) as it at firſt burſt out of one Cloud, ſo afterwards it was ſhot into, and embarraſſed by another.

Therefore I conclude, that the Fire of this *Apparition* after it had blaz'd, did not entirely go out, and was not totally extinguiſh'd, and conſequently that this our Phænomenon or Fiery Apparition did act according to the Laws of Nature, as is prov'd by Fact and Experience of all that ſaw it, and conſequently ſtill, that the ſaid *Phænomenon* in the Heavens, might have been produc'd meerly by the Ordinary Courſe of Nature, and need not raſhly be deem'd a Prodigy.

But after all, notwithſtanding this Great *Phænomenon* does ſeem to be nothing elſe but the Product of meer Natural Cauſes, yet ſtill, in Contemplating theſe and ſuch-like Wonderful Works of Nature, we are Naturally led from hence to celebrate and admire the Great *Author and Firſt Cauſe of Nature.* For Matter, whether we allow it Motion or not, cou'd not come into that Variety of Tempers and Compoſitions, in which we find it in the World, without the Influence and Direction of a Superior External Cauſe, which we call the *Author of Nature.* Thunder and Lightning are things (tho' eaſily accounted for by Natural Cauſes) that have terrify'd and affrighted the Greateſt Monarchs, and even the moſt Cruel Tyrants, witneſs *Tiberius* and other Roman Emperors. Total Eclipſes (likewiſe) of the Sun and Moon (tho' their Cauſes are ſo very well known, and their Times and Periods ſtated and fix'd) never fail to excite our Admiration and Praiſes of the Infinite *Creator*

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and Contriver of them, How much more may ſuch Uncommon Appearances force from us ſuch-like Pious Exclamations ——*O LORD GOD, Thou art become exceeding Glorious! Thou art cloath'd with Majeſty and Honour! Thou deckeſt thy Self with Light, as it were with a Garment, and ſpreadeſt out the Heavens like a Curtain, who makes the Clouds his Chariot, and walkeſt upon the Wings of the Wind! O LORD, How manifold are Thy Works! In Wiſdom haſt thou made them all, the Earth is full of Thy Riches.* Pſal. 104.

FINIS.

ADVERTISEMENT.

The following Books by the ſame Author.

An Account of a *Roman Pavement* found at *Stunsfield* in *Oxford-ſhire*, prov'd to be 1400 Years Old.

A Chronological *Hiſtory of England*, 2 Vol. 8°.

Miſcellanea in uſum Juventutis Academicæ. 8°.

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